REPORT ON THE 1986 INDUSTRIAL DIRECT DISCHARGES IN ONTARIO

OCTOBER, 1987

Ontario

Ministry of the Environment

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Minister

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Deputy Minister

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1986
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EXECUTIVE SUMMARY

The 1986 Industrial Direct Discharge Report is the annual up-date of the status of industrial direct dischargers. This annual report includes: monthly average loadings; a description of the various effluent limits; a compliance table; trend analyses for three industry groups (petroleum refineries, pulp and paper mills, primary steel producers); fish toxicity test results; a description of the company self-monitoring and Ministry audit mechanism; inclusion of all industrial sources besides those discharging to the Great Lakes Basin; an introduction to trace contaminant or toxic pollutant studies; a table of Ministry enforcement actions and a report on further developments of an electronic Industrial Monitoring Information System (IMIS). In response to citizen enquiries, some explanations have been expanded for clarity (such as the toxicity section).

Nine new sources have been entered into the Industrial Monitoring Information System, IMIS, and these loadings are reported. Limits have been identified either as requirements (set by a legal document) or guidelines (a desirable objective). Industrial sources in the compliance table are identified as being in compliance (every month) or out of compliance (for one or more months). Compliance has not changed significantly. All monthly averages were below the limits for fifty-three sources and the annual averages were below the limits for eighty-seven sources in 1986. Comparable results for 1985 were forty-seven for monthly averages and eighty-six for annual averages.

A new program - The Municipal Industrial Strategy for Abatement (MISA) - has started to control both conventional and trace toxic contaminants to a uniform minimum. A program report on MISA activities is included.

REPORT ON INDUSTRIAL DIRECT DISCHARGES

ONTARIO 1986

1.0 INTRODUCTION

The Ontario Ministry of the Environment (MOE) report on Industrial Direct Discharges for the year 1986 continues to include information published on sources in the 1985 report. Thus, part of the information in this report meets the requirements of Article VI 1(c) of the 1978 Great Lakes Water Quality Agreement (G.L.W.Q.A.). The Agreement states that an annual report, which includes compliance schedules and the status of compliance with monitoring and effluent restrictions, shall be provided to the International Joint Commission, (IJC). The portions of the Report related to the G.L.W.Q.A and thus to the IJC are identified (Appendix C and E).

Additional industrial sources are included in this report, over and above those in 1985. The effluent loadings and loading limits for 154 individual industrial plants are contained in this report, whereas in 1985 the number of sources reported was 147. Of these, 145 are reported herein, since two sources now discharge to a municipal sewer. More industrial sources will be reported in future reports; not all the direct discharges that MOE deals with have been entered into the Industrial Monitoring Information System (I.M.I.S).

Although Ontario has more than 154 industrial plants, the majority of the province's 12,000 industrial plants are not included because they discharge into municipal sewers, and the wastewaters are treated by municipal sewage treatment plants.

For 1986, the actual monthly and annual average pollutant loadings and flows, as well as guidelines or requirements are shown for each source. These requirements may be legal limits (Control Order, Certificate of Approval, Requirement and Direction, Federal Regulation), while the guidelines may be the Ministry's industrial concentration guideline objectives, Federal Guidelines or Best Professional Judgement criteria. In this report, the self-monitoring data for conventional pollutants and the inclusion of trace contaminant information continue. Program reviews made by the Ministry include comparisons of effluent limits by various Regulatory agencies. Such comparisons are included in the progress sections for the Petroleum Refineries and the Pulp and Paper sectors.

Out of 154 sources, 53 met their monthly average and 87 met their annual average requirements. Additional information is provided in the compliance section and in Appendix A.

2.0 INDUSTRIAL DISCHARGES - 1986 DATA

The 1986 report contains information similar to that presented in the 1985 Report. The monthly averages as well as the annual loadings and flows are reported. The bulk of this report consists of the Wastewater Discharge Summary contained in Appendix A. The Appendix summary sheets are arranged in alphabetical order by company name. Sources discharging to major drainage basins are noted in Appendix C.

The following information is presented for each discharge source:

1) The name of the discharger and the municipality in which the plant is located.

2) Its MISA sector name.

3) The receiving water body.

4) A description of the industrial activity.

5) Effluent quality as related to the industrial activity.
The industrial activity and the specific pollutants are linked.

6) Effluent treatment equipment and systems.

7) The nature of the flow--continuous or intermittent; the means of discharge--surface, open pipe, submerged diffuser, or drainage ditch, and the number of discharge points.

8) Comments on the effluent in particular where the actual pollutant value has exceeded the limit which may be a guideline or a requirement (a mandatory legal limit).

9) The Ministry of the Environment Region and the District Office that deals with the discharger.

10) The average monthly effluent flow discharged by the source.

11) The average monthly pollutant load discharged by the source and limits which may be a guideline, a best professional judgement value, a legal number (set by Control Order, Requirement and Direction, Certificate of Approval or Federal Regulation). Some discharges are seasonal and thus twelve monthly results are not available. Some pollutants are measured on a quarterly or semi-annual basis.

12) Data on pollutants which are monitored but not limited.

13) Ministry fish toxicity data for some industries. Self-monitoring toxicity data were provided by the Petroleum Refineries.

3.0 EFFLUENT LIMITATIONS

The Ontario Ministry of the Environment employs a variety of measures to achieve compliance with its requirements, ranging from voluntary measures, formal programs, Control Orders, Requirements and Direction, Certificates of Approval to prosecution. This will change as MISA will set minimum legal requirements across the province (see Section 3.5).

The implementation of pollution control is a co-operative federal/provincial endeavour. Under the federal Fisheries Act, national legally binding Regulations and voluntary Guidelines set effluent limits for specific industrial sectors. Federal Guidelines set minimum acceptable national standards for existing plants, while Regulations prescribe national effluent limitations for new and expanded plants for various industrial sectors. The only exception is the Federal Regulation for chlor-alkali plants which apply to both existing and new facilities.

Ontario has agreed, under the Federal-Provincial Accord for Environmental Protection, to adopt pollution control requirements which are at least as stringent as the national requirements. Since most Ontario plants are in the "existing" category, federal Guidelines apply to the vast majority of the plants in this report. Currently, these federal effluent Guidelines and Regulations (year of promulgation) apply to: Pulp and Paper (1971), Petroleum Refineries (1973), Metal Mining (1977), Mercury Cell Chloralkali Plants (1977), Metal Finishing (1977) and Meat and Poultry Processing Plants (1977). Under the Fisheries Act Regulations and Guidelines, it is an offence to violate a regulation limit. Although it is not an offence to exceed a guideline limit, meeting such a limit is considered compliance with the spirit of the law (Fisheries Act) which prohibits the deposit (discharge) of deleterious substances into waters frequented by fish. Federal Guidelines are, in fact, statements that indicate which practices will be considered necessary by the Federal government to meet the intent of the Fisheries Act.

3.1 Legal Requirements

Legally enforceable Control Orders (which are negotiated) under section 113 of the Environmental Protection Act may be issued to any existing plant. Control Orders define tasks and compliance dates by which specific tasks must be completed. Legally enforceable Requirements and Directions may also be issued under section 51 of the Ontario Water Resources Act. The requirements for issuance of these documents are different in the two Acts. For some sources, there are federal Regulation limits.

Certificates of Approval (C of A) for sewage works are issued under the Ontario Water Resources Act. In the past, the C of A was an approval to install pollution control equipment with the design numbers shown in the C of A. Recently, some sewage work approvals have begun to include legally enforceable effluent limits.

3.2 Effluent Guideline Limits

Historically, for most sources, Ontario has taken an effluent guidelines approach in setting provincial requirements. This approach, which was incorporated into the "Industrial Guidelines", was based initially on experience with municipal sewage treatment systems. It was presumed that treated industrial effluents should have the same pollutant concentrations as treated municipal effluent. However, since industrial effluents are quite different from municipal effluents in regard to specific pollutants, pollutant concentration and volume flow, application of the same treatment technology did not result in similar treated effluent concentrations. Industrial wastewater effluents in many cases would require dilution by cooling water, etc. to meet the effluent concentrations. Guidelines allow for this difference where similar treatment technology has been installed.

New plants recycle and reuse water in-plant to a much greater extent than do older plants. As a result, even when such plants use a highly effective treatment system, the effluent may exceed concentration limits. In these situations, the Ministry sets loading limits on a kilograms per day basis rather than on an effluent concentrations basis.

Ontario also uses a "water quality approach" in setting effluent limits.* In the case of biodegradable pollutants, every river or lake has a definable dilution, dispersion or assimilation (self-purification) capacity for non-persistent waste discharges. Water quality considerations take precedence when biodegradable discharges exceed the assimilative capacity of the receiving waters, but are within the limits set by federal Guidelines or Regulations. In these cases more stringent requirements, based on the assimilative capacity, are used to set effluent loading limits. Some plants employ secondary treatment facilities to reduce biodegradable discharges; some of these biodegradable compounds are defined as toxic organics. The degree of biodegradation varies for specific compounds.

3.3 Best Professional Judgement Limit

Where there are no legal limits, the MOE District Officer may set a Requirement based on his Best Professional Judgement. This incorporates a review of the manufacturing technology, effluent treatment technology and past performance. The source will have demonstrated that its effluent quality can be controlled at lower limits than those in any Guideline.

Where innovative technology is being tried, the limits and/or conditions may be set out in a Certificate of Approval. Best Professional Judgement would also be used in this case.

Thus, limits to the various discharges are set in several forms: pollutant concentrations (milligrams per litre), pollutant loadings (kilograms per day), load per unit of production (kilograms related to production rate), and radioactive loadings (becquerels per litre per day). These limits may be based on any of the above rationales.

3.4 Toxicity

3.4.1 Toxicity Testing

The acute toxicity or acute lethality test has been used by the Ministry since 1965 as a biological parameter. The results of toxicity testing in this report are based on a procedure common to water quality assessment in Canada. Rainbow trout are exposed to a series of dilutions of the test sample under static conditions and an observation of mortalities over a period of four days (96 hours) is made. From these observations, an LC50 is estimated. LC50 represents the "median lethal concentration". The 96 hour LC50 is the concentration, expressed in either percent (%) effluent, mg/l or other unit of concentration, that kills 50% of the animals during 96 hours of exposure."Chemical examination alone of a complex industrial waste does not provide sufficient information on their effects on the aquatic biota for the protection of the aquatic environment. Moreover, the toxicity of a complex mixture of wastes and chemicals cannot be determined by chemical means." (1).

The best use of biological testing is to determine whether toxicity exists. If an effluent is toxic, the best use of chemistry is to subsequently determine what is the cause of that toxicity. While fundamental to monitoring and control of discharges, chemical analyses represent only an indirect means of determining potential effects in the receiving water. The knowledge of effects caused by various concentrations and mixtures in various kinds of water is a most important yet elusive link between knowledge of effluent concentrations and environmental effects. Toxicity tests on the other hand represent a direct measure of significant environmental impact. To be sure, there are problems of variability and confounding environmental factors such as pH, hardness

* Water Management: Goals, Policies, Objectives and Implementation Procedures of the Ministry of the Environment. November 1978. Revised May 1984.

and temperature, yet these are minor factors compared to the uncertainty of judging environmental impacts based on chemical parameters alone.

Many people equate "toxicity" with acute lethality to fish, since that is a common use, but toxicologists think of toxicity in much broader terms and include bioaccumulation, growth effects, reproduction effects etc. The broader viewpoint is appropriate to any wastes in surface waters. "Toxicity" therefore is any undesirable effect on organisms or ecosystems.

An accute effect comes speedily to a crisis or end-point while a chronic effect is long lasting or continued. The words "acute" and "chronic" in connection with toxicity tests refer to short (acute) and long (chronic) exposures. They require a specific organism as a reference. For *Daphnia* (water flea), with a life cycle of weeks, acute usually means two days or less while chronic usually means a week or more. However, for trout with a life cycle of years, acute usually means four days or less and chronic means several months or more.

3.4.2 The Basic Principle

In the basic, short-term acute lethality test, an equal number of test animals are put into each container and are exposed to the sample and dilutions of the sample for 96 hours. The number of dead animals in each effluent container is counted and removed at regular, pre-determined periods. Following the exposure period, the LC50 is calculated. The protocol describing details of the rainbow trout static 96-hr acute lethality test is available from the Aquatic Toxicity Unit from John Lee at (416) 235-5806 or Gary Westlake at (416) 235-5797. In addition to the protocol, it is important that special attention be given to sampling, shipping and storing of samples for toxicity tests. While the total time from sampling to performing the test must be within five days, no more than two of these days should be spent in shipping or at high temperatures. For each test run, 80 litres of the effluent sample should be sent in plastic pails lined with bags with no head space. The Aquatic Toxicity Unit of the Water Resources Branch maintains facilities at the Rexdale Laboratory to conduct static bioassays.

The unit of measurement of the short-term toxicity test is the estimated median lethal concentration (LC50). This value is the concentration which is lethal to 50% of the test animals at the end of a predetermined exposure interval. Thus, a 96-hour LC50 concentration of a toxicant will kill half the test oganisms in 96-hours. It is important that the LC50 not be confused with a "safe concentration" of a toxicant. Usually the safe concentration of a substance or effluent is obtained by multiplying the LC50 value by an appropriate application factor and/or by reviewing sublethal and chronic data for fish and other aquatic organisms.

If all discharges do not kill fish at any point in the environment including at the point of discharge, meaningful improvements in Ontario's water quality will occur. The same philosophy was used in the development of sectoral regulations under the federal Fisheries Act in the early 1970's. These regulations have only been partly effective since the toxicity control was included only as a guideline.

Substances in the effluents which are more persistent or can bioaccumulate to high concentrations in biota will require much greater controls. Substances in this category include many of the metals (e.g. mercury) and some higher molecular weight chlorinated organics (e.g. pentachlorophenols).

The rainbow trout is not the most sensitive organism in aquatic environments. It is chosen as a test species partly because it is robust enough to be cultured conveniently in the laboratory while most aquatic species cannot be cultured. If rainbow trout barely survive conditions of a discharge in four days, there are surely many organisms just as important to the aquatic community that would survive for only very short periods. The fixed period of four days is primarily chosen to express results in a reproducible fashion. Yet, because the response to most toxicants is logarithmic with respect to the duration of exposure, the majority of mortalities most commonly occur near the beginning of the test.

Given the complex mixture of substances in effluents, a lack of toxicological data and environmental criteria for many industrial substances, and an inadequate understanding of additive synergistic or antagonistic effects, more and more industrial and regulatory agencies are turning to the use of whole effluent toxicity testing for monitoring and controlling discharges to the aquatic environment. The integrative nature of the test measures the lethality of all the toxicants present acting simultaneously. Under the Canada-Ontario Environment accord, Ontario has agreed to establish and enforce effluent requirements at least as stringent as the agreed federal baseline requirements. These requirements will apply immediately to all new or expanded production facilities and as rapidly as possible in all other cases.

The provincial government may impose more stringent standards than the federal requirements and if so, the more stringent requirements will prevail. The Ontario Ministry of the Environment utilizes the fish toxicity test to identify industrial discharges acutely lethal to aquatic organisms as referred to in Policy 3 of the Ministry's Water Management Goals, Policies, Objectives and Implementation Procedures (2).

Toxicity and MISA (Municipal/Industrial Strategy for Abatement)

The Municipal/Industrial Strategy for Abatement or MISA is intended to provide a uniform and systematic way of integrating water management activities leading to a comprehensive abatement strategy to control hazardous as well as conventional discharges from municipal and industrial sources.

3.4.3 Legal Authority

Existing water pollution legislation obligates the Ministry to ensure that discharges are being assessed and controlled with respect to toxicity. A discharge that kills fish is considered to be a "contaminant" under Section 13 of the Environmental Protection Act (4). Several successful prosecutions using toxicity evidence support this contention.

The toxicity test may also be used to determine violations of the following provincial legislation (3), (4):

a) The Ontario Water Resources Act; Revised Statutes of Ontario, 1980, Chapter 361, Section 16

> **16.**- (1), Every municipality or person that discharges deposits or causes or permits the discharge of any material of any kind into or in any lake, well, river, pond, spring, stream, reservoir or other water or watercourse or on any shore or bank thereof or into or in any place that may impair the quality of the water of any well, lake, river, pond, spring, stream, reservoir or other water or water course is guilty of an offense. R.S.O. 1980, c. 361, s. 16 (1); 1986, c. 68, s. 23 (1).

b) The Environmental Protection Act; Revised Status of Ontario, 1986, Chapter 141, Section 13

> **13.**- (1), Notwithstanding any other provision of this Act or the regulations, no person shall deposit, add, emit or discharge a contaminant or cause or permit the deposit, addition, emission or discharge of a contaminant into the natural environment that,
>
> a) causes or is likely to cause impairment of the quality of the natural environment for any use that can be made of it;
>
> b) causes or is likely to cause injury or damage to property or to plant or animal life;
>
> (c) causes or is likely to cause harm or material discomfort to any person;
>
> (d) adversely affects or is likely to adversely effect the health of any person;
>
> (e) impairs or is likely to impair the safety of any person;
>
> (f) renders or is likely to render any property or plant or animal life unfit for use by man;
>
> (g) causes or is likely to cause loss of enjoyment of normal use of property; or

(h) interferes or is likely to interfere with the normal conduct of business. R.S.O. 1980, c. 141, s. 13 (1); 1983, c. 52. s. 4.

3.4.4 Compliance

In the MISA program, it will be essential to establish clearly what exactly constitutes compliance with respect to toxicity. The most logical endpoint is that any sample taken from an effluent should not kill 50% of the test fish at 100% concentration in the test period of 96 hours (96 hr LC50 > or = 100%). Keeping in mind the practicalities of testing, this can be determined by monthly toxicity tests on all undiluted final effluents.
Should an effluent prove non-lethal by this procedure consistently for a significant time period, sampling frequency could be reduced. Subsequently, if at the reduced frequency the sample should prove lethal to fish, monthly bioassays could resume. The dates of sampling should be fixed in advance.

Industry has been encouraged to practise water conservation, and this has led to several benefits including reduced waste loading to a water body. Acute lethality, however, is a concentration-based effect and is not related to loading. Water use per unit of production also requires control limits in order to reduce loading of persistent contaminants.

3.4.5 Toxicity References

1. Standard Methods for the Examination of Water and Wastewater. 14th ed. 1975. Prepared and published jointly by: American Public Health Association, American Water Works Association, Water Pollution Control Federation.

2. Water Management Goals, Policies, Objectives and Implementation Procedures. Ontario Ministry of the Environment. November, 1978.

3. The Ontario Water Resources Act. Revised Statutes of Ontario, 1980. Chapter 361.

4. The Environmental Protection Act, 1971. Statutes of Ontario 1971. Chapter 86.

3.5 New Monitoring and Regulatory Initiatives (MISA)

In June 1986 Environment Minister Jim Bradley announced the MISA - "The Municipal - Industrial Strategy for Abatement" - program. This new approach to controlling point-source water pollution has as the ultimate goal the virtual elimination of toxic contaminants from all industrial and municipal effluent discharges into the province's waterways. The program is being developed in consultation with Environment Canada, industries, interest groups and the general public. Joint Technical Committees for each sector will recommend practical and effective requirements for each regulation.

For the first time in Ontario, there will be regulations to limit the pollution loadings to surface waters. For each of the major sectors of industry and the municipal sector, two regulations will be developed. Initially, dischargers will be subject to Monitoring and Reporting Regulations which will require them to identify and measure concentrations and amounts of toxics in their effluents. Minimum legal requirements for the submission, accuracy and reliability of self-monitoring information, including specifications for sampling and analytical protocols and quality assurance and quality control procedures will be set. This self-monitoring program will be audited by the Ministry of the Environment.

This initial monitoring phase will be followed by Compliance or Limits Regulations that will specify allowable concentrations, as well as amounts or loadings, of toxic pollutants

for each discharger. This will be done on a sector-by-sector basis and the specified levels will be based on the Best Available Technology Economically Achievable (BATEA).

More stringent effluent limits may be required for specific sites to protect sensitive water bodies. This action would occur in cases where water quality assessments show that controls beyond those required by BATEA may be necessary to protect the environment.

A MISA Advisory Committee (MAC) was appointed in November 1986. It is made up of independent technical and environmental experts. The Advisory Committee is to review the draft regulations and provide advice and recommendations to Environment Minister Jim Bradley. Close liaison is being maintained between the Advisory Committee and the Technical Committees through cross-representation at their respective meetings.

In 1986, four Technical Advisory Committees of industry and government representatives began a scientific review of trace toxic compounds in the effluent from the Petroleum Refining, Organic Chemicals, Pulp and Paper, and the Metal Mining and Refining Sectors. For additional comment and data on trace toxic compounds see Analysis of Trace Contaminants and Trends (Appendix G) and Petroleum Refineries Progress.

The draft Petroleum Refineries Monitoring Regulation incorporates specific principles, procedures and reporting requirements as a good database is essential when dealing with trace contaminants. Pollutants in the parts per billion range concentration are considered to be 'trace'. The MISA data base has associated with it a formal quality control program, and sufficient documentation that the user could make independent judgements concerning data quality, based on methodology and quality control. Therefore the laboratory which performed each analysis should be identified. Similarly, the organizations or individuals responsible for sampling and field measurements are to be identified since data quality depends on correct sampling and measurement procedures in addition to careful chemical analysis. Sampling is seldom the responsibility of the analytical laboratory. The Effluent Monitoring Regulation for the Petroleum Refineries sector was released in July 1987; in draft form for public comment.

A legal sample point prior to dilution and discharge will be required. Since some process wastewater streams are diluted 9 to 1 (cooling water to treated process wastewaters), the sampling should occur prior to dilution. In many old existing factories, cooling water from heat exchangers, pumps, compressors, etc. are discharged into the process wastewater sewers. It is possible to dilute pollution beyond the current limits of analytical detection.

Samples should be collected by trained technical staff. Documentation of sample collection and handling must include sample type, location, depth and field conditions, methods of collection, preservation, filtration and storage, and description of any measurements or analysis performed in the field.

Samples and field measurements will form part of a continuous sampling and monitoring program, with repeated samples and measurements at the same location. This enables data base users to try to develop realistic probability density functions for stochastic modelling purposes which increases the usefulness of the data.

For MISA purposes, Ontario's industries will be placed in one of the following categories:

- **PETROLEUM REFINERIES (0100)**
  Seven petroleum refineries that manufacture a family of refined petroleum products and blend lubricating oils and grease.
- **ORGANIC CHEMICALS (0200)**
  Twenty-one factories that manufacture organic chemicals, plastics and synthetic fibres.

- **PULP AND PAPER (0300)**
  Twenty-eight mills that make pulp, paper, paperboard, corrugating medium and boxboard from logs and used paper (newspaper, ledger paper, containers, etc).
- **METAL MINING AND REFINING (0400)**
  Industrial activities that consist of mining and concentrating ores (53 major active mines) and smelting and refining non-ferrous metals.
- **IRON AND STEEL (0500)**
  Factories that make iron and steel from ore, scrap and coal. Primary steel is produced at four locations while electric arc furnaces are used at three locations.
- **ELECTRIC POWER GENERATION (0600)**
  Establishments that generate electrical power using fuel oil, coal, natural gas and uranium.
- **INORGANIC CHEMICALS (0700)**
  Factories that make inorganic chemicals (sulphuric acid, caustic hydrochloric acid, fertilizers etc.)
- **METAL CASTING (0800)**
  Ten factories that make castings from iron, steel and other metals such as the two big automotive engine foundries.
- **INDUSTRIAL MINERALS (0900)**
  Factories that are primarily engaged in mining and processing non-metallic minerals including asbestos, gypsum, potash and sand (aluminum oxides).

Regulations are under development or planned for each sector. Table 1 indicates the time when each sector Joint Technical Committee (JTC) met (or will meet) along with the expected timing of the public release of each sector monitoring regulation. The monitoring regulation will come into force following a public review period and revisions, if necessary. This is expected to take three months. Effluent Limits Regulations for each sector will be developed taking account of monitoring data collected during the monitoring regulation. These are expected to be in place in three years.

Table 1 - The MISA Timetable

SECTOR	START	MONITORING REGULATION
0100 Petroleum Refining	APR 86	JUL 87 *
0200 Organic Chemicals	MAY 86	NOV 87
0300 Pulp and Paper	NOV 86	MAR 88
0400 Metal Mining and Refining	DEC 86	JAN 88
0500 Iron and Steel	FEB 87	JUL 88
0600 Electric Power Generation	AUG 87	MAY 88
0700 Inorganic Chemicals	SEPT 87	JUN 88
0800 Metal Casting	AUG 87	NOV 88
0900 Industrial Minerals	DEC 86	JAN 88
2100 Municipal Sewage Treatment Works	MAY 86	SEP 88

* draft monitoring regulation issued for public comment July 1987.

Several other major Ministry projects supporting MISA are also well under way. A list of priority pollutants for Ontario is being developed, and is entitled the Ontario Effluent

Monitoring Priority Pollutants List or EMPPL. EMPPL includes a listing mechanism which recognizes and assigns significance to the environmental effects of a specific compound or pollutant A study has been done on the availability of private laboratory services in North America. To meet a tight timetable some of the analytical work for the ESSO Petroleum and Petro-Canada refineries study by Canviro Consultants had to be done in Vancouver, British Columbia. Also, a major study is in progress to assess various socio-economic impacts relating to the implementation of the MISA program for each industrial sector (Economic and Financial Profiles).

Pilot site studies are also in progress at six sites across the province, covering both Great Lakes and inland waterways situations. These will provide data to enable standard procedures and techniques to be developed for assessing the impact of discharges on receiving water quality.

To support the implementation of MISA, work is underway to revise the water management policies in the Ministry of the Environment's Blue Book - the policy manual for water quality management in Ontario.

3.5.1 MISA SECTOR PROGRESS

As noted, a draft Petroleum Refining Monitoring Regulation has been released for public comment. See Trends for more information on trace contaminants.

Twenty-one organic manufacturing plants are updating previous Environment Canada and Ministry of the Environment effluent surveys by completing an in-depth characterization of their effluent streams for conventional parameters and the U.S. EPA list of 126 priority pollutants. In addition, analyses for 2,3,7,8-TCDD and the PCB family were done. The Ministry of the Environment also carried out effluent sampling and analyses for the above parameters as well as "open" scans to identify compounds not on the EPA list. Ministry of the Environment and industry effluent characterization data have been combined with data from river pilot site studies, joint U.S. EPA and Environment Canada studies (Upper Great Lakes Connecting Channel Study) and U.S. EPA generic process data to provide a broad data base net on which to base the MISA Monitoring Regulation requirements for the Organic Chemicals Manufacturing Sector.

As of August, 1987, five meetings of the MISA Mining Sector group have taken place. A complete round of pre-characterization sampling at selected Ontario mining properties has already taken place and the second round is due to begin during the last week in August. Results of the first round of sampling will be presented to the mining sector group at the September third meeting. Also, a draft mandatory monitoring regulation is being prepared by a subgroup of the mining JTC. All programs of the MISA Mining Sector are on schedule. The JTC expects to have a final draft of the monitoring regulation available this fall. Limited work on Best Available Technology in the mining industry commenced in August.

4.0 COMPLIANCE

The actual monthly average and the calculated annual average were compared to the pollutant limit or requirement. Table 2, (pages 17 to 22), summarizes such a comparison for the point sources in this report.

For the years 1985 and 1986, the compliance status is as follows.

	1985	1986
- Sources reported	147	154
- in (out of) compliance with annual averages	86(59)	87(67)
- in (out of) compliance with monthly averages *	47(98)	53(101)
- companies with no requirements/guidelines	2	0
- companies instituting controls	15	21
- control order requiring further reduction beyond current levels.	-	4
- number of companies with limits set by Control Order or Certificate of Approval	28	31

For companies discharging into the Great Lakes Basin, the compliance status is as follows.

	1985	1986
Sources Reported	130	134
In (out of) compliance with annual averages	75(55)	79(55)
In (out of) compliance with monthly averages *	42(86)	39(95)
No Requirement/Guideline	2	0

Parameters which have been exceeded by a source are identified. For companies not in compliance, refer to the company source sheets in Appendix A for comments.

The word "compliance" as used in this report does not indicate that no contraventions of the legislation and regulations have occurred, but rather that the data recorded in the report do not, in themselves, demonstrate that there have been contraventions.

* These figures include sources whose Requirements are 'thirty consecutive operating day rolling averages'.

Table 2
1986 COMPLIANCE SUMMARY

Company Name	Location	Page Number	In Compliance		Company Instituting Controls	See Company Sheet	Control Order Requires Further Reductions	Limits Set By Control Order or C. of A.*	Parameters in Exceedance of Ministry Guidelines or Requirements ( ) Denotes Number of Months Exceeded
			Monthly	Annual					
Abitibi-Price Inc.	Iroquois Falls	A-1	x	x				x	
Abitibi-Price Inc. (Ft. William Div.)	Thunder Bay	A-2	x	x				x	
Abitibi-Price Inc. (Thunder Bay Div.)	Thunder Bay	A-3	x	x		x		x	
Agnico Eagle Mines Ltd. (Penn Hill)	Cobalt	A-4		x		x			Arsenic(1) Iron(1)
Agnico Eagle Mines Ltd. (Refinery)	Cobalt	A-5							Arsenic(3)
American Standard Division of Wabco Standard	Cambridge	A-6		x					Iron(2) TSS(1)
Atlas Steel Company Limited	Welland	A-7							TSS(5) Chromium(4) Cadmium(7)
Bakelite Thermosets Limited	Belleville	A-8		x		x			Phenols(4)
Beaver Wood Fibre Company	Thorold	A-9				x			BOD(7) TSS(10)
B.F. Goodrich	Niagara Falls	A-10				x			BOD(8) TSS(4) Phosphorus(1) NH4-N(1)
Blackstone Industrial Products	Stratford	A-11	x	x					
Boise Cascade Limited (Fort Frances)	Fort Frances	A-12	x	x					
Boise Cascade Limited (Kenora)	Kenora	A-13		x		x		x	TSS(3)
Borg-Warner Chemicals Limited	Cobourg	A-14			x	x		x	TSS(7) Phosphorus(10) BOD(1) COD(1)
Campbell Red Lake Mines Limited	Balmerton	A-15							Arsenic(2) Cyanide(1) Metals(3)
Campbell Soup Company Limited	St. Mary's	A-16							TSS(6) BOD(2)
Canadian Canners Limited	St. David	A-17							TSS(2)
Canadian Industries Limited	Cornwall	A-18	x	x					
Canadian Industries Limited	Courtright	A-19	x	x				x	
Canadian Oxy-Durez	Fort Erie	A-20			x	x			Phenols(6)
CASCO	Cardinal	A-21					x	x	TSS(12) COD(12)
Celanese Canada Limited	Ernestown Twp.	A-22				x			BOD(8) COD(8) TSS(3)
Champlain Industries Limited	Tara	A-23	x	x					
Chesapeake & Ohio Railway Co. Limited	St. Thomas	A-24	x	x					
Corby Distilleries Limited	Corbyville	A-25							COD(3) TSS(3)
Courtaulds Limited & BCL Limited	Cornwall	A-26				x		x	BOD(12) Acidity(1)
Cyanamid Canada Limited	Niagara Falls	A-27		x					TSS(1)
Cyanamid Canada Limited (Welland Plant)	Niagara Falls	A-28	x	x				x	
Denison Mines Limited	Elliot Lake	A-29	x	x					

Table 2
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			Monthly	Annual					
Denison Mines Limited (Stanrock)	Elliot Lake	A-30	x	x					
Denison Mines Limited (Williams Lake)	Elliot Lake	A-31	x	x					
Detour Lake Mines	Timmins	A-32			x	x		x	Copper(11)
Dickenson-Sullivan Joint Venture	Balmerton	A-33							Arsenic(2) Metals(3) Cyanide(1)
Dofasco Inc.	Hamilton	A-34							Iron(1) Phenols(3) TSS(3)
Dome Mines Limited	South Porcupine	A-35			x	x			Metals(2) Cu(2) Zn(1) Ni(1)
Domtar Chemicals Limited	Goderich	A-36	x	x					
Domtar Chemicals Limited CDC Division	Orillia	A-37	x	x					
Domtar Construction Materials Limited	Thorold	A-38			x	x			BOD(12)
Domtar Fine Papers	Cornwall	A-39	x	x		x		x	
Domtar Fine Papers	St. Catharines	A-40							BOD(12)
Domtar Packaging Limited	Trenton	A-42				x			TSS(10) BOD(8)
Domtar Packaging Limited	Red Rock	A-41	x	x				x	
Domtar Wood Preserving Limited	Trenton	A-43		x		x			Phenols(7)
Dow Chemical Canada Limited	Sarnia	A-44	x	x					
Dupont Canada Inc. (Tetra Ethyl Lead)	Maitland	A-48		x	x	x			Lead(3)
Dupont Canada Inc. (Nylon Intermediates)	Maitland	A-47		x					TSS(2)
Dupont Canada Inc.	Corunna	A-45	x	x					
Dupont Canada Inc. (Nipissing Works)	North Bay	A-49		x		x			NH3-N(1)
Dupont Canada Inc.	Kingston TWP	A-46	x	x					
E.B. Eddy Forest Products Limited	Espanola	A-50	x	x				x	
E.B. Eddy Forest Products Limited	Ottawa	A-51				x		x	BOD(1) TSS(3)
Eldorado Nuclear Limited	Port Hope	A-54		x					
Eldorado Nuclear Limited	Port Granby	A-53		x					Arsenic(4)
Eldorado Nuclear Limited	Welcome	A-55		x					Arsenic(4)
Eldorado Resources Limited	Blind River	A-52	x	x					
Esso Chemicals Canada Limited	Sarnia	A-56	x	x					
Esso Petroleum Canada	Sarnia	A-57	x	x					
Ethyl Canada Inc.	Corunna	A-58	x	x					
Exolon	Thorold	A-59	x	x		x			TSS(1)
Falconbridge Limited	Falconbridge	A-60		x					Metals(7) Iron(2) Nickel(4)

Table 2
1986 COMPLIANCE SUMMARY

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			Monthly	Annual					
Falconbridge Limited (Moose Lake)	Falconbridge	A-61							Iron(4) Nickel(12)
Falconbridge Limited (Onaping Mine)	Onaping Falls	A-62			x	x			Nickel(3) Metals(1) TSS(4)
Fiberglas Canada Limited	Sarnia	A-63	x	x					
Fleet Manufacturing Company Limited	Fort Erie	A-64			x	x			Cadmium(8) TSS(3)
Ford Motor Company of Canada Limited	Oakville	A-66			x	x			BOD(11) Phenols(10) TSS(11) PPUT(1)
Ford Motor Company of Canada Limited	Niagara Falls	A-65				x			PPUT(1) TSS(5)
Ford Motor Company of Canada Limited	St. Thomas	A-67				x			Zinc(11) PPUT(12) TSS(1) Flow(12)
Ford Motor Company of Canada Limited	Windsor	A-68							Phenols(11) TSS(12) Solext(4)
Fraser Inc.	Thorold	A-69				x			BOD(6) TSS(1)
Gay Lee Foods Cooperative Limited	Teeswater	A-70	x	x					
General Chemical Canada Inc.	Amherstburg	A-71		x					Fluoride(2) TSS(2)
General Motors of Canada Limited	St. Catharines	A-72				x			Phenol(3) TSS(5)
GNB Batteries Canada Limited	Fort Erie	A-73			x	x			Lead(12) TSS(9) BOD(2)
Great Lakes Forest Products Limited	Thunder Bay	A-75		x				x	TSS(2)
Great Lakes Forest Products Limited	Dryden	A-74	x	x					
H.J. Heinz Company of Canada Limited	Leamington	A-76		x					BOD(2)
Inco Ltd. (Copper Cliff Creek Nickel Ref.)	Sudbury	A-77		x					Nickel(2) Metals(4) NH3-N(1) pH(1)
Inco Ltd. (Copper Cliff Creek Wastewater Tr.)	Sudbury	A-78		x					Metals(1) NH3-N(1)
Inco Ltd. (Crean Hill)	Sudbury	A-79		x					pH(2)
Inco Ltd. (Frood Stobie Emerg. Tailings Area)	Sudbury	A-80			x	x			Cu(2) Fe(3) Ni(3) TSS(2) pH(4)NH3-N(1)
Inco Ltd. (Garson Mine)	Sudbury	A-81		x					pH(9) Metals(2) TSS(1)
Inco Ltd. (Levack Tailings Area)	Sudbury	A-82							pH(8) Nickel(1) Metals(2) TSS(3)
Inco Ltd. (Nolin Creek)	Sudbury	A-83		x					NH3-N(2) pH(12) Cu(2) Fe(4)
Inco Metals Limited	Shebandowan	A-85	x	x		x			
Inco Metals Limited	Port Colborne	A-84	x	x					
International Minerals & Chemicals	Dunnville	A-86				x			Phosphorus(6) pH(12)
J.M. Schneider Inc.	Ayr	A-88				x		x	BOD(4) PPUT(3) TSS(4) Sol.(3)NH3-N(3)*
James River Marathon Limited	Marathon	A-87	x	x			x	x	
Kerr Addison Mines Limited	Virginiatown	A-89			x	x	x		Arsenic(11) Cyanide(11) CU(3) Ni(11)**
Kidd Creek Mines Limited (Met. Site)	Timmins	A-90				x			Zinc(1) pH(5) TSS(1)
Kidd Creek Mines Limited (Mine Site)	Timmins	A-91				x			Zinc(2) TSS(5) pH(5)
									*Flow(5) **Zn(3)

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			Monthly	Annual					
Kimberly Clark of Canada Limited	St. Catharines	A-93				x			BOD(10)
Kimberly Clark of Canada Limited	Huntsville	A-92	x	x					
Kimberly Clark of Canada Limited	Terrace Bay	A-94		x		x			PPUT(1)
Kraft Foods Limited	Ingleside	A-95			x	x			TSS(11) Phosphorus(12) BOD(5)
Lac Minerals (Macassa Division)	Kirkland Lake	A-96			x	x		x	Cyanide(8) Copper(3) TSS(1)
MacMillan Bloedel Limited	Sturgeon Falls	A-97						x	BOD(12)
Malette Kraft Pulp & Paper	Smooth Rock Falls	A-98				x		x	BOD(8) TSS(1)
Mattabi Mines Limited	District of Kenora	A-99							Zinc(12) pH(7) Iron(2)
Mitsubishi Electronics Limited	Midland	A-100	x	x				x	
Nestle	Chesterville	A-101			x	x			Phosphorus(9)
Nitrochem Inc.	Maitland	A-102				x			Nitrites, Nitrates(12) Nitrogen(12)
Noranda Hemlo Inc.	Marathon	A-104		x					Copper(1) Nickel(1)
Noranda Inc. Lyon Lake Division	Thunder Bay District	A-103							Zinc(7) Iron(1)
Noranda Mines Limited GECO Division	Manitouwadge	A-105							TSS(10) Cu(11) Zinc(2) Metals(2) Fe(7)
Northern Wood Preservers	Thunder Bay	A-106							Phenols(5) TSS(1)
Norton Company	Niagara Falls	A-107		x					TSS(2)
Ogilvie Mills	Thunder Bay	A-108				x		x	BOD(7)
Omstead Foods Limited	Wheatley	A-109							BOD(4) NH3-N(2) PPUT(5) TSS(5)
Ontario Hydro (Domestic Treatment)	Tiverton	A-114	x	x					
Ontario Hydro (Heavy Water Plant)	Tiverton	A-116	x	x					
Ontario Hydro (Thermal Data Stations A & B)	Tiverton	A-115	x	x					
Ontario Hydro (TGS)	Nanticoke	A-112		x					TSS(1)
Ontario Hydro (Thermal Data)	Nanticoke	A-113	x	x					
Ontario Hydro (TGS) (Lakeview)	Toronto	A-118	x	x					
Ontario Hydro (TGS) (Lambton)	Courtright	A-110		x		x			Temp. Rise(1)
Ontario Hydro (TGS) (Thunder Bay)	Thunder Bay	A-117	x	x					
Ontario Hydro (Pickering)	Pickering	A-111	x	x					
Pamour Porcupine Mines - Pamour Site	Timmins	A-119		x	x	x			Iron(2)
Pamour Porcupine Schumacher Division	Timmins	A-120							Metals(12) Cyan(3) Cu(12) Fe(1) Ni(2)
Petro Canada Products Ltd. Formerly Gulf Can.	Mississauga	A-121			x	x			NH3-N(1) Phen(6) TSS(6) Solext(1)

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			Monthly	Annual					
Petro-Canada Products Limited	Oakville	A-122			x	x			TSS(9) NH3-N(4) Solext(1) Phenol(11)
Petrosar Limited	Sarnia	A-123	x	x					
Polysar Limited	Sarnia	A-124	x	x					
Provincial Papers Div. (Abitibi-Price)	Thunder Bay	A-125	x	x				x	
Reichhold Chemicals Limited	Thunder Bay	A-126						x	TSS(12)
Rio Algom Limited (Panel Mill)	Elliot Lake	A-127	x	x					
Rio Algom Limited (Quirke Mill)	Elliot Lake	A-128							Iron(4)
Rio Algom Limited (Stanleigh Mill)	Elliot Lake	A-129		x					TSS(1)
Rothsay Limited	Rothsay	A-130	x	x		x			
Shell Canada Limited	Corunna	A-131	x	x					
Sherman Mine	Temagami	A-132							Iron(1)
Sohio	Niagara Falls	A-133		x					TSS(2) Solvent Extr.(2)
Spruce Falls Power & Paper Co. Limited	Kapuskasing	A-134				x			BOD(6)
St. Mary's Paper Inc.	Sault Ste. Marie	A-136	x	x				x	
Stanley Hardware Div. of Stanley Canada Inc.	New Hamburg	A-135			x	x			TSS(7) Ni(12) Zn(12) Cyanide(1) Cu(1)
Stelco Inc.	Hamilton	A-137							Solext(1) Phenols(9) TSS(6)
Stelco Inc. Lake Erie Works	Nanticoke	A-138				x		x	TSS(1)
Stelco Inc. Page Hersey Works	Welland	A-139	x	x					
Stelco Inc. Welland Tube Works	Welland	A-140		x					TSS(2)
Strathcona Paper Company	Camden East Twp.	A-141	x	x		x		x	
Suncor Sunoco Group	Sarnia	A-142	x	x					
Teck-Corona Inc.	Marathon	A-143		x					Cu(1)
Tend-R-Fresh Ltd. (Div. of Maple Leaf Mills)	Petersburg	A-144				x		x	BOD(2) NH3-N(2) PPUT(4) TSS(4) Sol.(3)
Texaco Canada Limited	Port Credit	A-145		x					TSS(2)
Texaco Canada Limited (Nanticoke Refinery)	Jarvis	A-146	x	x					
The Algoma Steel Corporation Limited	Sault Ste. Marie	A-147					x	x	
The Algoma Steel Corporation Ltd. (Ore Div.)	Wawa	A-148	x	x					
The Canadian Salt Company Limited	Windsor	A-149		x					TSS(1)
The Ontario Paper Company Inc.	Thorold	A-150	x	x				x	
Trent Valley Paperboard Mills	Trenton	A-151				x		x	TSS(12) BOD(12)
Union Carbide Canada Limited	Corunna	A-152				x			TSS(4)

Table 2
1986 COMPLIANCE SUMMARY

Company Name	Location	Page Number	In Compliance		Company Instituting Controls	See Company Sheet	Control Order Requires Further Reductions	Limits Set By Control Order or C. of A.*	Parameters in Exceedance of Ministry Guidelines or Requirements ( ) Denotes Number of Months Exceeded
			Monthly	Annual					
Washington Mills Limited	Niagara Falls	A-153			x				TSS(8)
Wickes Manufacturing Co. Limited	Windsor	A-154			x				TSS(11) Ni(4)
Footnote:									
N/A - not applicable									
International Minerals & Chemicals	Dunnville	Production Stopped July, 1984, Treatment System Kept Operational							
Inco Ltd. Sulphur Products Department	Sudbury	Treated at Copper Cliff Wastewater Effluent Plant							
* C. of A. - Certificate of Approval with Specified Limits									

5.0 TRENDS

The 1986 report continues to report the trends for the same three sectors shown in 1985. In the 1987 Report, additional sectors will be reported on in the Trends section. MISA will require each Industrial Sector to control and monitor a minimum common core of pollutants. The first sector to be regulated under the MISA program is the Petroleum Refining group. Petroleum Refining trends are already reported. The next sector to be regulated is the Organic Chemicals Manufacturing group. While currently there is no minimum common core of control pollutants for the Organic Chemicals, the premonitoring activities will provide some common reference data for 1987.

The status of petroleum refineries, the pulp and paper industry and the steel industry are summarized on pages 23 through 52. Readers may wish to refer to the subsequent section, Pollutants and their Significance (Appendix F) when reviewing the data.

5.1 PETROLEUM REFINERIES STATUS

Petroleum refineries essentially separate and combine some of the hydrocarbons found in crude oil by using heat and catalysts. Non-contact cooling water is necessary to condense and cool products separated by distillation.

Over 90% of the effluent from a petroleum refinery can be non-contact cooling water . However, it is possible to have a leakage into the cooling water so that the cooling water is more polluted than the treated wastewater. New petroleum refineries, like Texaco at Nanticoke and Petrosar at Sarnia, discharge very little cooling water because air coolers and cooling water recycling (cooling towers) are used. Older existing refineries incorporate cooling water recycling into new process units; for example the new lubricating oil process at Petro-Canada (Gulf, Clarkson) uses cooling water recycling. The effluent from the newer refineries also contains fewer trace contaminants than the older refinery effluents.

TABLE 3
1986 Petroleum Refineries Effluent Volumes

Old/ New	Company/Location	Barrels per day Nominal Capacity	Effluent in cubic metres/day	Effluent to Capacity Ratio
Old	Petro-Canada at Clarkson (Gulf)	62,000	11,040.5 (process only) *	.178
Old	Shell at Corunna	70,000	222,885	3.184
Old	Petro- Canada at Oakville	75,000	4,982.09 (process only)	.066
Old	Esso at Sarnia	120,000	210,417	1.753
Old	Suncor at Sarnia	85,000	97,068.3	1.142
New	Texaco at Nanticoke	105,000	3,622.2	.034
New	Petrosar at Sarnia	100,000	6,418.14	.064

* Cooling water flow discharged separately.

The large effluent volumes reflect the use of once-through cooling water at older refineries. When treated process wastewaters and non-contact cooling waters are combined, pollutants are diluted and become difficult to detect. On the other hand, total water use and pollutant discharges - raw and treated - are much reduced for new plants.

Small flows of wastewater that contain high concentrations of sulphides or ammonia are stripped (typical removal efficiencies of 99% and 80-90%, respectively) before discharge to the effluent treatment system. The treatment systems are designed to handle storm runoff and ship ballast water on a batch basis.

All the petroleum refineries have effluent treatment systems that consist of two primary stages (oil/water separators), some form of intermediate storage, neutralization, secondary treatment and biomass removal. The treatment systems are comparable to those required by the U.S. EPA. The quality of treated effluent from the petroleum refineries is judged by five parameters - Phenolics (4-amino-antipyrine phenols), Ammonia - Nitrogen, Total Suspended Solids, Oil and Grease and the federal petroleum fish lethality test (24-hour static test). Several refineries have started to use Ontario's 96 hour toxicity test in place of the 24 hour test. Ontario petroleum refineries usually meet all these limits - Ontario maximum concentrations, Environment Canada production rate allowables, and even U.S. E.P.A. category (process configuration, product line and production rate) limits.

In the United States, the Environmental Protection Agency (Federal Register, Volume 47, No. 201, Monday, October 18, 1982, Rules and Regulation) decided not to set priority pollutant limits for the petroleum refineries. Prior to this decision, EPA analyzed the treated effluent from seventeen refineries for priority pollutants. Although EPA's priority pollutant list identified 129 compounds, the treated effluent was analyzed for over 300 compounds; 12 metals and 18 organics were identified and quantified in the parts per billion (ppb) range. Moreover, EPA concluded that properly operated treatment systems and in particular, the biological section, reduced priority pollutants to the trace level. Thus, in EPA's judgement, good treatment resulting in the discharges of conventional pollutants consistently below the allowable limits assures control of trace toxic compounds. However, individual U.S. State agencies have set an aromatics monitor and report requirement in their permits. For more information on individual State permits see:

- Summary of Priority Pollutant Requirements of 28 U.S. Petroleum Refinery NPDES Permits (Table 3) page 43, Environmental Contaminants in Petroleum Refinery Wastewaters: An Assessment of Current Information and a Monitoring Approach, MISA, April 15, 1987.

- Summary of Entire (prior to June 1986) MOE Data base On Ontario Refinery Effluents, Table 2, was primarily useful in establishing the classes of trace organics in treated petroleum refinery effluent (ibidem). Use of this data is limited because different detection limits were used, several samples were diluted by combining with cooling waters, analytical protocols varied, etc.

In the draft Petroleum Refineries Monitoring Regulation, the principle of monitoring undiluted treated effluent is incorporated. The final discharge is often a wastewater stream that includes cooling water; the cooling water portion may be over 90% of the volume. Such dilutions can reduce a contaminant concentration to the non-detection level; this is true even where analytical procedures can detect organics in the parts per quadrillion range.

To assess the significance of the contaminant, its discharge rate (loading) in kilograms per day must be established. The draft Regulation includes flow measurement criteria that must be met.

Figure 1

REFINERY EFFLUENT MEASUREMENT, SAMPLING, ANALYSES, & TREATMENT

SHELL, CORUNNA

MEASUREMENT

INTAKE - pump curves & amperage
FINAL EFFLUENT - by calculation (sum of DAF & Chemical Plant flows)
MEASURED - potentially contaminated cooling water from API Separator by calibrated channel
- flow from Dis. Air Flotation by Parshall flume
- flow from chemical plant by orifice meter
- water to Ethyl Corp.
- stormwater overflow (Parshall flume & automatic sampler)

SAMPLING

- 24 hour composite/day, 7 days/week for final clarifier (equal time/equal sample volume)
- 24 hour composite/day but 5 days per week after stormwater overflow (when flowing) and potentially contaminated once-through cooling water
- 48 hour composite continuous of biotreater feed, flow of pretreated chemical plant wastewaters, intake water and clean once-through cooling water

ANALYSES

- phosphorus- once/week inlet to biox
- clarifier composite - daily: pH, oil & grease, phenolics; 3/week: TOC; 1/week: TSS, NH3, sulphide
- for stormwater & potentially contaminated once-through cooling water - daily: pH, phenolics, oil & grease; once/week: TSS, TOC, NH3, & sulphide
- feed to biox (includes chemical effluent) - BTX analysis once/week
- once/quarter 24 hour static fish toxicity
- inlet water and clean once-through cooling water samples - daily: phenolics, pH, oil & grease - weekly: TSS, NH3, TOC, sulphide

SAMPLING POINTS

- outlet of clarifiers, outlet of API Separator for potentially contaminated once-through cooling water, clean once-through cooling water, biofeed (includes chemical effluent, pretreated chemical plant effluent

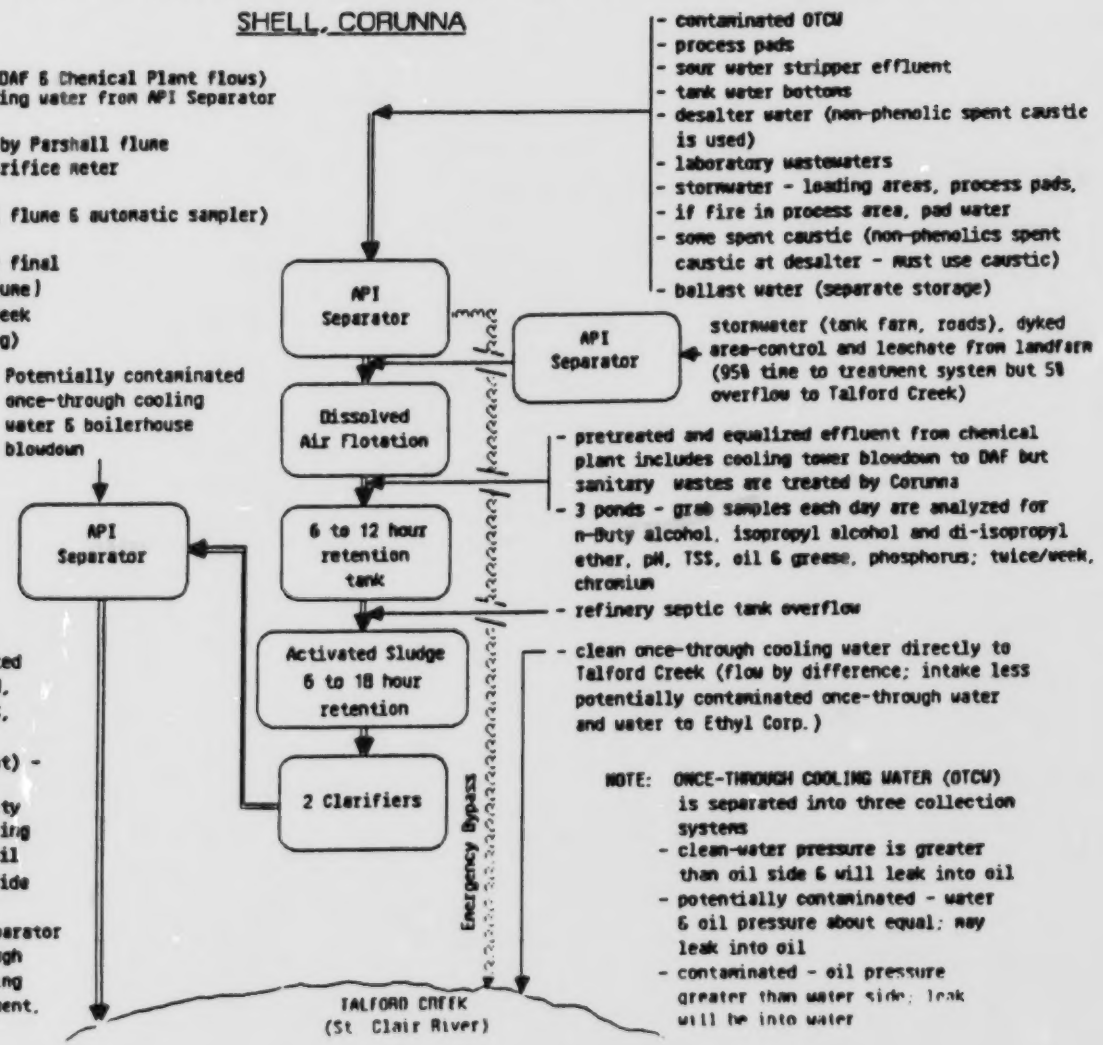


Figure 2

REFINERY EFFLUENT MEASUREMENT, SAMPLING, ANALYSES, & TREATMENT

ESSO PETROLEUM, SARNIA

MEASUREMENT

INTAKE - not measured (estimated from pump curves)

FINAL EFFLUENT - calculated (sum of upstream measurements) & once-through
- cooling water based on intake pump curves)

MEASURED & RECORDED
- flow from each API separator (3) in effluent treatment system
- flow from 2 package biological cells on sour water stripper effluent

SAMPLING

- 24 hour composite/day for 7 days/week of treated effluent after clarifiers and same for once-through cooling water (lab analyzes composite, based on flow, of cooling water samples)
- fixed time - fixed volume composite

ANALYSES

- each sample can include oil and grease, TSS, phenolics, sulphides, NH3, pH, TOC
- once/month 24 hour static fish toxicity

SAMPLING POINTS

- effluent from 4 clarifiers
- effluent from 4 OTCW separators

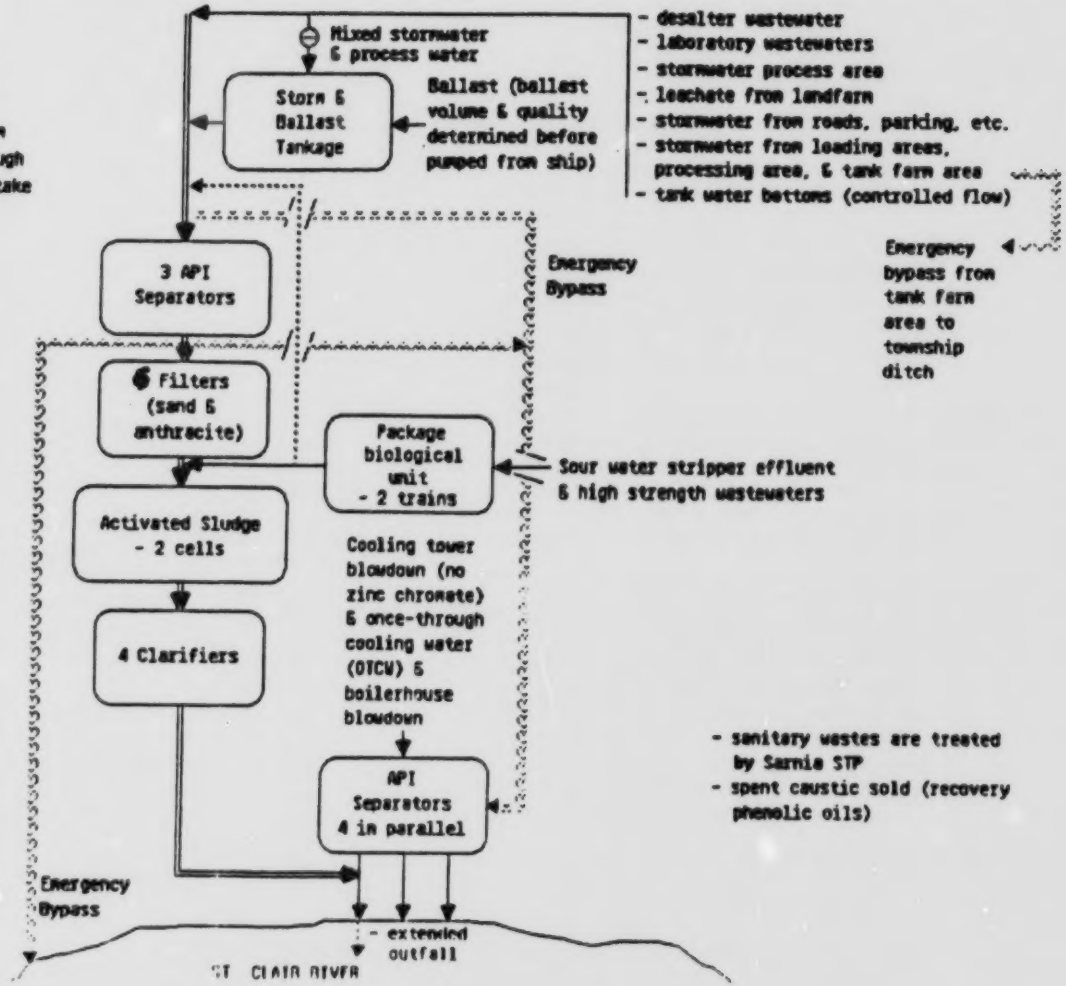


Figure 3

REFINERY EFFLUENT MEASUREMENT, SAMPLING, ANALYSES, & TREATMENT

PETRO-CANADA, TRAFALGAR (OAKVILLE)

MEASUREMENT

INTAKE - not measured

FINAL EFFLUENT - flow meter & integrator

MEASURED - flow to effluent treatment system API separator by Parshall flume

- flow to Induced Air Flotation Separator by venturi meter

SAMPLING

- final effluent - 24 hour composite/day for 4 weekdays (sample every 30 minutes)
- but 72 hour composite for weekend (sample every 2 hours)

ANALYSES

- operator - every 4 hours - sulphides, pH, modified phenolics final effluent into aeration cells and contaminated stormwater
- lab - final effluent 3/week - oil & grease, TSS, MAS, phenolics, sulphides, COD
- once/month 24 hour static fish toxicity

SAMPLING POINTS

- outlet API Separator prior to equalization basin (pH, phenolics, sulphides)
- inlet & outlet Induced Air Flotation
- final effluent from surge lagoon
- outlet of clarifiers

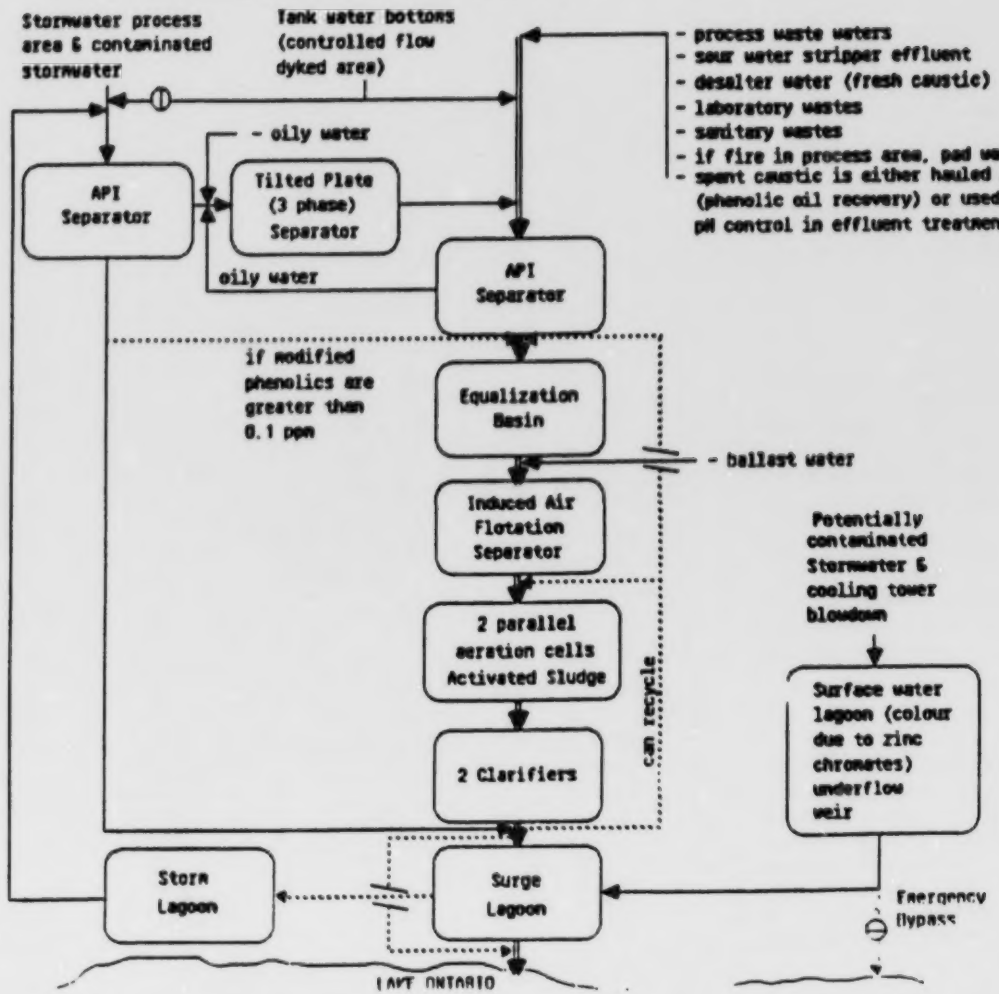


Figure 4

REFINERY EFFLUENT MEASUREMENT, SAMPLING, ANALYSES, & TREATMENT

PETROSAR (POLYSAR), CORUNNA

5 Effluent Systems - uncontaminated stormwater, oily wastes, chemical wastes, sanitary & landfarm

MEASUREMENT

INTAKE - measured by orifice plate recorded & integrated (used for net loading calculation)

FINAL EFFLUENT - orifice plate, recorded & integrated; effluent from final pond is pumped

Treatment flows for control purposes
- chemical unit system - combined flow by Parshall flume to equalizer, orifice flow to DAF, magnameter flow from DAF, flow from clarafier by Parshall flume, flow to each activated carbon cell by orifice plate and orifice plate on flow from each carbon cell

SAMPLING

- 24 hour flow proportional composite/day for 7 days per week of final effluent at pumps
- operator control of system - 2 samples per 12 hour shift usually within treatment system

ANALYSES (final ponds)
- each composite - TSS, phenolics, TOC, NH3, oil & grease, pH, chromium, zinc
- sulphide 3 times per week
- once/month 24 hour static fish toxicity

SAMPLING POINTS
- discharge from final ponds
- leachate sludge landfarm (5 to 6 times/year)
- potentially contaminated stormwater

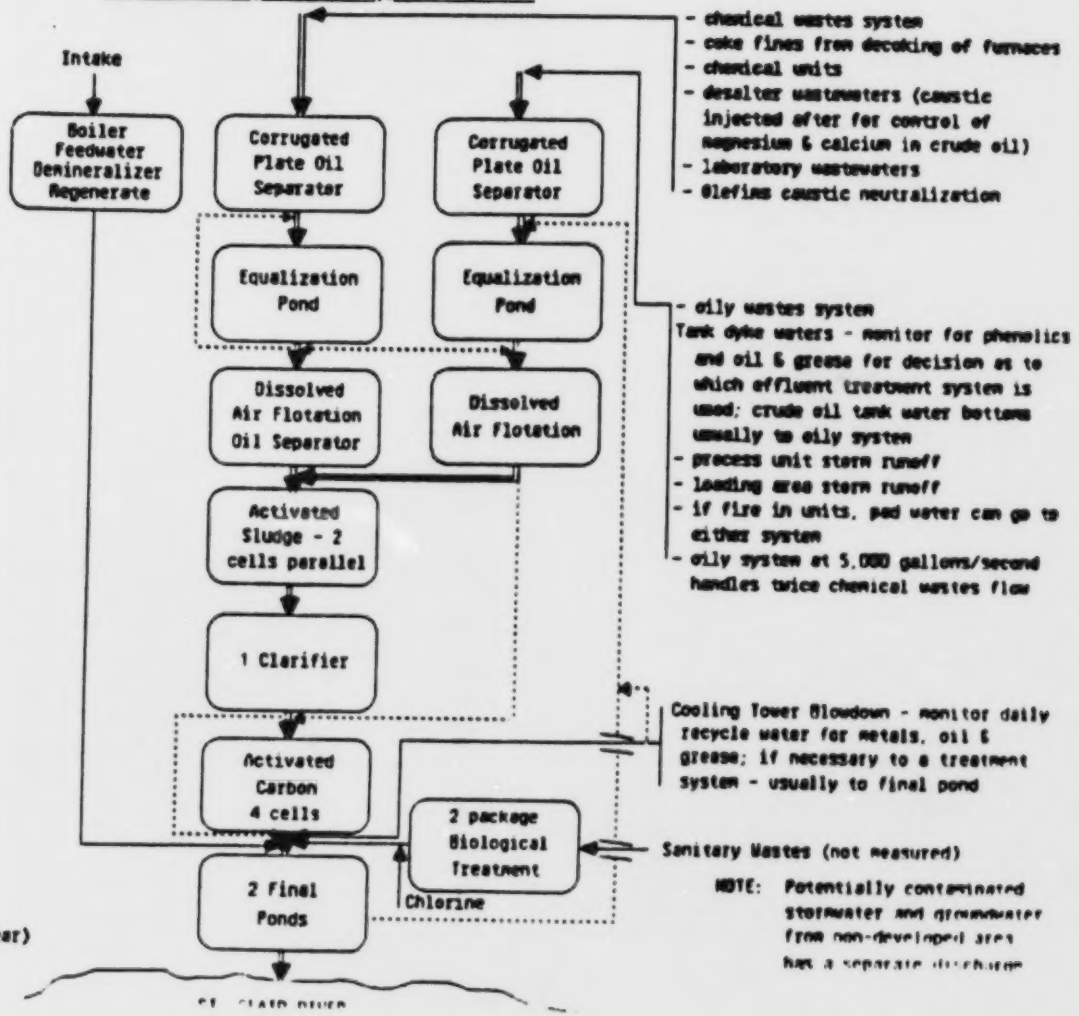


Figure 5

REFINERY EFFLUENT MEASUREMENT, SAMPLING, ANALYSES, & TREATMENT

SUNCOR, SARNIA

MEASUREMENT

INTAKE - measured by a pilot tube (1981)
in-the-pipe device for cooling water only

FINAL EFFLUENT - Parshall flume - impounding basin flow
Parshall flume - combined flow from clarifiers ($.5 million in 1986) - recorded & integrated

Other Measurements
- ballast water from tank
- from process DAF to activated sludge
- flow to each clarifier (2 different size maintain correct hydraulic load)
- sludge return to each cell

SAMPLING

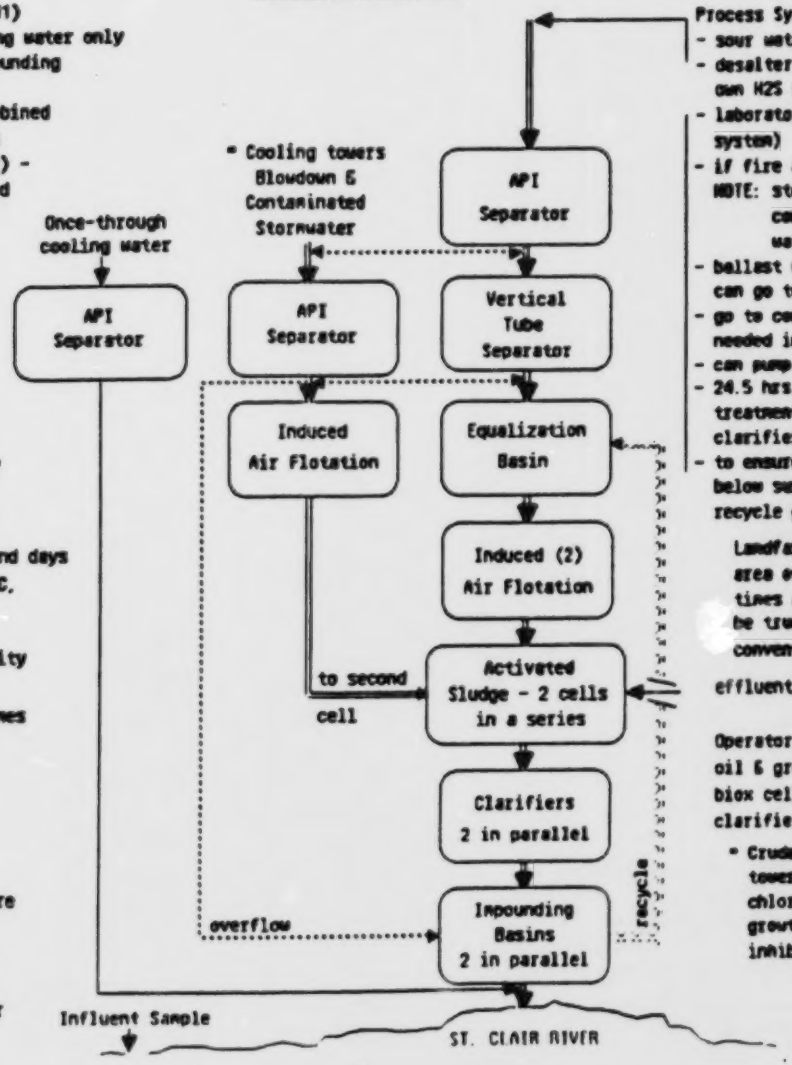
Intake - grab

Final Effluent - 24 hour composite/day
7 days/week
- fixed volume sample

ANALYSES
- 5 for each weekday and 1 for 2 weekend days
- TSS, phenolics, oil & grease, pH, TOC, NH3-N for each sample
- sulphide 1 week
- once/month 24 hour static fish toxicity

SAMPLING POINTS

Operators sample and test usually 4 times per shift for pH and phenolics (ppm)
- inlet Vertical Tube Separator
- inlet Induced Air Flotation
- outlet aeration cell No. 1
- outlet aeration cell No. 2
- outlet of each clarifier (2)
- outlet of each impounding basin before dilution
- outlet API Separator in once-through cooling water
- outlet API Separator on cooling water blowdown



Process System
- sour water stripper effluent
- desalter wastewater from its own H2S stripper
- laboratory wastewaters (either system)
- if fire at units, process pad sewers

NOTE: steam purchased from Dow; condensate used as process water; small steam trim boilers
- ballast water preheated by condensate can go to either system process/contam
- go to contaminated system if heat is needed in second biox cell
- can pump contaminate in ballast tank
- 24.5 hrs. retention time within process treatment system (API separator to clarifiers normal flow)
- to ensure that recycle pumps (20 feet below surface) always work, some recycle goes on continuously

Landfarm leachate remote from main area of refinery - discharge 3 to 4 times a year to surface runoff - could be trucked to treatment - checked for conventionals before discharge

effluent from central septic tank

Operator tests every 4 hours - pH, oil & grease, NH3 - intake, feed to biox cells, final effluent from each clarifier, once-through cooling water.

* Crude unit and BTX have own cooling towers and so does hydrocracker - chlorine used to control algae growth; non-metallic corrosion inhibitor used.

Figure 6

REFINERY EFFLUENT MEASUREMENT, SAMPLING, ANALYSES, & TREATMENT

MEASUREMENT (flow)

INTAKE - measured but not used

FINAL EFFLUENT - measured by orifice, recorded and integrated

Within treatment system
- flow from DAF measured and used in treatment system control
- clean stormwater flow measured, recorded & integrated and discharged

SAMPLING
- 24 hour composite/day, 7 days/week
- fixed volume sample

ANALYSES
- every day phenolics & pH since phenolics are good indicators of change in treatment
- 3 days/week - TSS, oil & grease, sulphide, NH4 & more frequently if required
- 96 hour static fish toxicity once/month but federal requirement only 24 hour results
- clean stormwater analyzed for 6 pollutants before discharged as a batch
- automated ammonia and phenolics analyses are used for treatment operation

SAMPLING POINTS
- used by operator to control effluent treatment
- before & after API Separator
- inlet to DAF
- inlet to activated sludge
- effluent from clarifier
- inlet & outlet dual filter
- final effluent

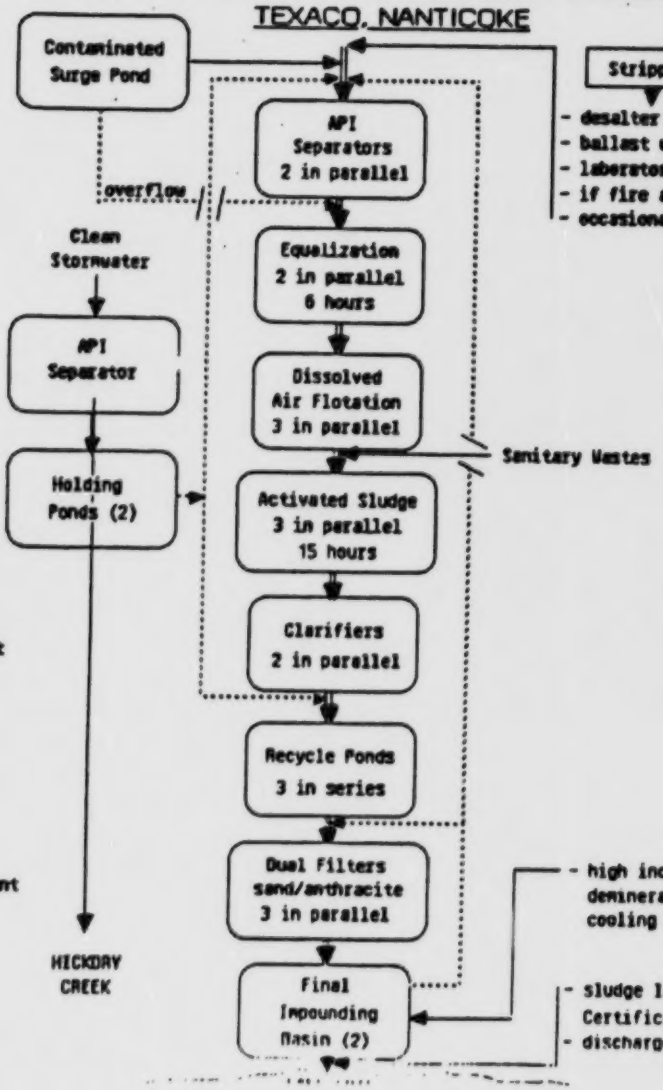


Figure 7

REFINERY EFFLUENT MEASUREMENT, SAMPLING, ANALYSES, & TREATMENT

PETRO-CANADA, MISSISSAGUA (CLARKSON)

MEASUREMENT

INTAKE - not measured
FINAL EFFLUENT - from clarifiers by Parshall flume & flow integrator
- once-through - cooling water - each measured by own weir (2)
- stormwater from final basin - intermittent discharge - integrator on flow - Parshall flume

SAMPLING

24 hour composite/day - equal volume (15 minute interval) - 7 days/week for treated process effluent
- once per week for OTCW
- stormwater - (due to intermittent discharge - a grab is as good as composite - sheen on water noticed before a detected oil and grease result)

ANALYSES

- daily: oil and grease, TSS, phenolics, sulphides, NH3, pH for process wastewaters
- inlet of sand filter and outlet of equalizer - daily: oil & grease, phenolics, sulphides
- once/month: 24 hour static fish lethality test
- oil & grease, phenolics for OTCW

SAMPLING POINTS

- inlet of sand filter & outlet of equalizer by operators for control
- outlet of both clarifiers (includes cooling water blowdown)
- discharge of once-through cooling water
- stormwater from final basin if discharged

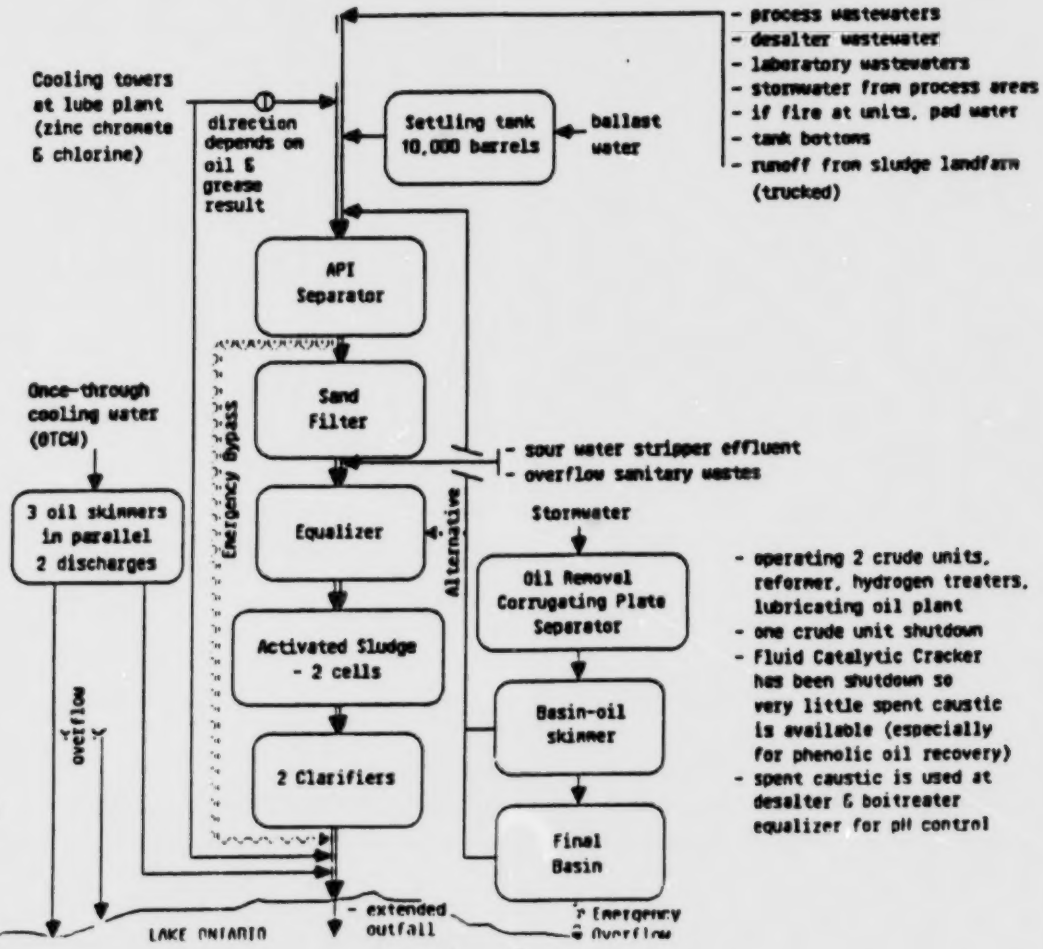


TABLE 4

Petroleum Refineries Comparison of Allowables and Actuals; Ontario, Environment Canada, U.S. EPA
(unless indicated otherwise, units are kg/day)

July 1986

REFINERY-POLLUTANT	PETRO-CANADA (Gulf)	ESSO	PETROSAR	PETRO-CANADA	SHELL	SUNCOR	TEXACO
TOTAL SUSPENDEND SOLIDS (biological solids, insoluble oil, clay)							
Actual	120.3	104.9	37.0	135.4	382.2	460.0	4.46
Ontario Env. Canada	415.6	694	173.8	301.7	456.6	322	327.3
US EPA	128.8	408	125.9	166.6	144.3	144.2	209
PHENOLICS							
Actual	0.08	.2	.02	0.13	.6	.19	0.009
Ontario Env. Canada	17.3	38.9	7.2	12.6	19.0	13	13.6
US EPA	1.04	3.3	1.02	1.35	1.17	1.17	1.69
AMMONIA-NITROGEN							
Actual	28.3	42.35	52.0	47.7	3.6	23.0	0.154
Ontario Env. Canada	142.4	241	86.9	108.7	158.5	118	163.3
US EPA	58.3	190.0	57.0	73.4	65.3	65.3	87.1
OIL AND GREASE							
Actual	77.29	21.37	2.0	4.4	220.1	81.0	2.05
Ontario Env. Canada	173.0	389.0	72.4	125.7	190.2	134	136.3
US EPA	49.0	153	47.9	63.5	54.9	54.95	79.6

REFINERY-POLLUTANT	PETRO-CANADA (Gulf)	ESSO	PETROSAR	PETRO-CANADA	SHELL	SUNCOR	TEXACO
SULPHIDES							
Actual	0.1			5.1		.2	0.014
Ontario (none)							
Env. Canada	5.8	9.64	2.4	4.18	6.3	2.05	4.5
US EPA	.85	2.7	.84	1.08	.96	.96	1.39
Monthly Federal/Ontario Fish Test for 1986	12 passes	12 passes	12 passes		12 passes		12 passes

Note:

- Environment Canada has 3 different allowable limits for each pollutant: the most stringent, the monthly average limit, has been calculated by each refinery.

- US EPA has five categories reflecting the refinery product line such as petrochemical (Petrosar) and integrated (Shell, Suncor, Texaco). The production rate and categories are used to determine the allowables; 30 day average limits were used.

N/A - not available

- Ontario's concentration limits for TSS (15 ppm), phenolics (.02 ppm), ammonia-nitrogen (10 ppm), oil and grease (10 ppm) and sulphides (none) have been converted to loadings.

TABLE 5

PETROLEUM REFINERIES STATUS
(ALL LOADINGS IN KILOGRAMS PER DAY)

	TOTAL SUSPENDED SOLIDS				
	1982	1983	1984	1985	1986
ESSO CANADA @ SARNIA	276.0	(0)*	290.0	418.0	395.1
PETRO-CANADA @ CLARKSON (GULF)	210.0	226.0	341.0	158.0	148.8
PETRO-CANADA @ OAKVILLE	31.1	60.2	54.6	71.8	93.5
PETROSAR @ CORUNNA	133.0	106.0	70.2	43.7	29.9
SHELL @ CORUNNA	309.0	(0)*	(0)*	767.0	371.1
SHELL @ OAKVILLE	40.3	50.6	CLOSED	CLOSED	CLOSED
SUNCOR @ SARNIA	393.0	67.3	255.0	416.0	362.8
TEXACO @ NANTICOKE	5.1	9.6	9.4	4.5	1.59
TOTALS	1398.0	520.0	1020.0	1879.0	1402.8

	PHENOLICS				
	1982	1983	1984	1985	1986
ESSO CANADA @ SARNIA	1.90	.68	.60	.70	.21
PETRO-CANADA @ CLARKSON (GULF)	2.80	.22	1.41	1.072	.34
PETRO-CANADA @ OAKVILLE	.08	.12	.17	.18	.298
PETROSAR @ CORUNNA	1.31	.40	.43	.10	.030
SHELL @ CORUNNA	.51	.72	.42	.35	.18
SHELL @ OAKVILLE	.03	.04	CLOSED	CLOSED	CLOSED
SUNCOR @ SARNIA	1.90	.77	1.08	.67	.35
TEXACO @ NANTICOKE	.04	.12	.04	.02	.008
TOTALS	8.57	3.07	4.16	3.10	1.416

* INTAKE EXCEEDED DISCHARGE

TABLE 5 (continued)
PETROLEUM REFINERIES STATUS
(ALL LOADINGS IN KILOGRAMS PER DAY)

	AMMONIA-NITROGEN				
	1982	1983	1984	1985	1986
ESSO CANADA @ SARNIA	83.0	81.0	56.00	24.70	14.1
PETRO-CANADA @ CLARKSON (GULF)	54.7	33.2	50.50	21.50	41.2
PETRO-CANADA @ OAKVILLE	29.8	29.1	48.00	50.10	49.8
PETROSAR @ CORUNNA	39.9	14.5	19.50	14.50	15.26
SHELL @ CORUNNA	16.5	(0)*	4.80	6.45	2.73
SHELL @ OAKVILLE	13.7	23.0	CLOSED	CLOSED	CLOSED
SUNCOR @ SARNIA	49.0	30.3	31.10	23.30	33.25
TEXACO @ NANTICOKE	2.1	13.6	3.26	1.28	1.51
TOTALS	229.0	225.0	213.00	141.80	157.85

	SOLVENT EXTRACTABLES				
	1982	1983	1984	1985	1986
ESSO CANADA @ SARNIA	131.0	10.0	176.00	113.0	80.15
PETRO-CANADA @ CLARKSON (GULF)	232.0	223.0	311.00	91.1	89.5
PETRO-CANADA @ OAKVILLE	2.4	6.0	6.92	5.7	9.13
PETROSAR @ CORUNNA	6.0	18.1	10.40	11.1	4.17
SHELL @ CORUNNA	58.7	72.1	88.00	117.0	118.7
SHELL @ OAKVILLE	7.3	12.4	CLOSED	CLOSED	CLOSED
SUNCOR @ SARNIA	40.4	24.3	94.30	44.1	72.83
TEXACO @ NANTICOKE	2.9	6.6	6.7	32.1	2.68
TOTALS	481.0	372.0	693.00	384.1	377.2

* INTAKE EXCEEDS DISCHARGE

YEAR	1982	1983	1984	1985	1986
PRODUCTION BBLS/DAY	502000	519000	-	514337	

1967 TOTALS (KILOGRAMS/DAY)	
AMMONIA	2320
SUSPENDED SOLIDS	-
OIL AND GREASE	4110
PHENOLICS	102

FIGURE 8

REFINERIES SECTOR STATUS

FOUR MAJOR PARAMETERS

ONTARIO

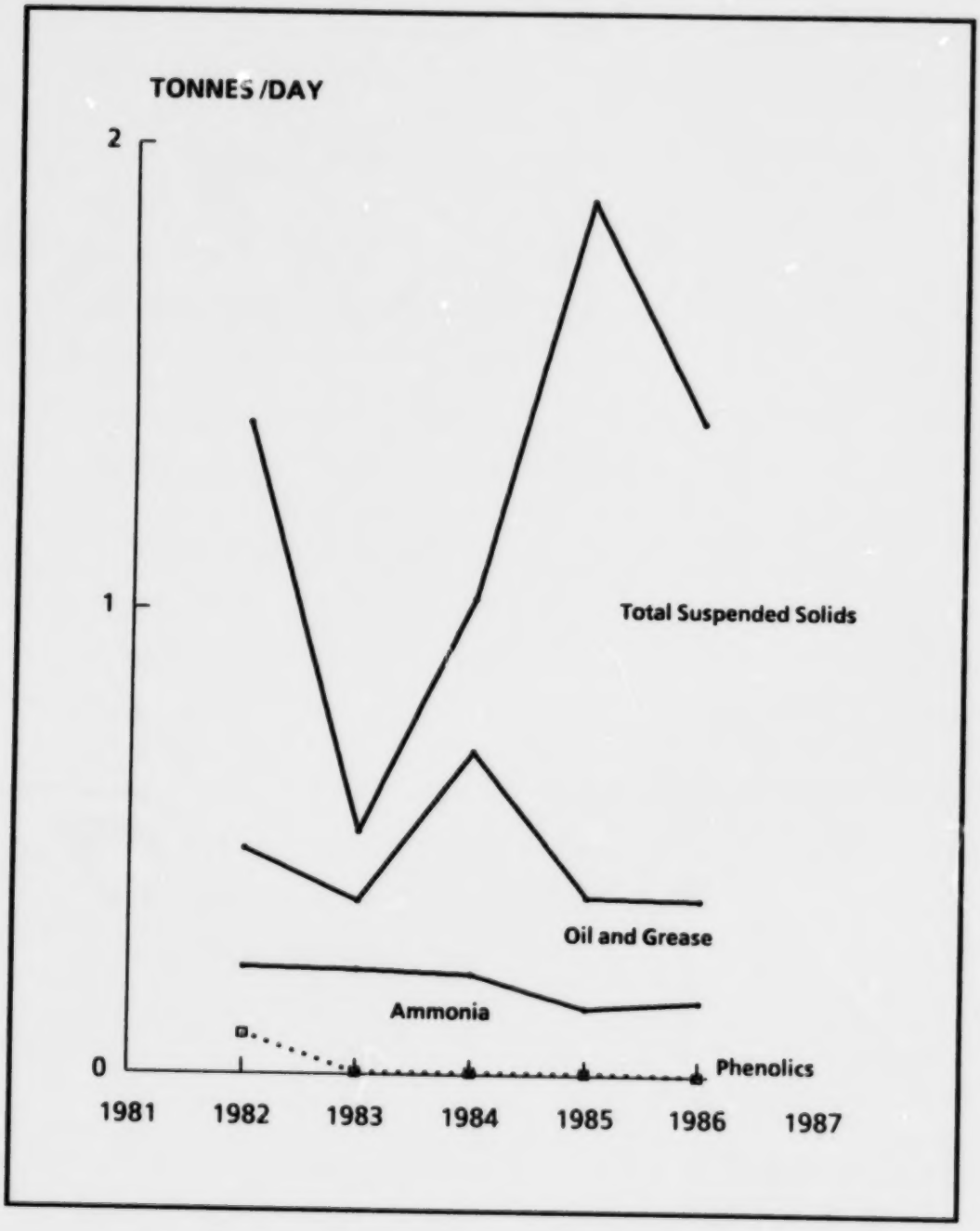


Table 6 Example of Trace Organics sampling

TABLE : CONCENTRATION OF CONVENTIONAL CONTAMINANTS AND METALS IN ACTIVATED SLUDGE PLANT INFLUENT AND EFFLUENT AT ESSO REFINERY, SARNIA

		SAMPLE PERIOD 1												SAMPLE PERIOD 2						
	DATE	11 AUG		13 AUG		15 AUG		17 AUG		19 AUG		21 AUG		15 SEP	17 SEP	19 SEP	21 SEP	23 SEP	25 SEP	
	DAY	1-AM	1-PM	2-AM	2-PM	3-AM	3-PM	4-AM	4-PM	5-AM	5-PM	6-PM	6-PM	1	2	3	4	5	6	
Conventional Parameters																				
pH	Influent	7.1	7.3	7.1	7.2	7.2	7.1	7.1	6.9	7.2	6.9	7.4	7.2	7.4	7.0	7.2	7.2	8.3	7.4	
	Effluent													6.7	6.8	7.2	7.1	6.9	6.8	
Conductivity (umhos/cm)	Influent	890	570	450	570	570	570	850	900	820	910	710	570	760	780	1140	790	600	900	
	Effluent													590	710	670	640	600	730	
Alkalinity (mg/L as $CaCO_3$)	Influent	14	72	69	60	53	44	54	74	55	57	64	51	75.7	99.8	127.2	107.3	122.5	122.1	
	Effluent													58	65	61	59	95	53	
Suspended Solids (mg/L)	Influent	NA	13	NA	11	NA	3	NA	8	NA	6	NA	7	70	40	24	16	60	26	
	Effluent													30	7	6	4	8	6	
Dissolved Organic Carbon (mg/L)	Influent	11.5	10.6	11.5	11.9	11.7	11.8	12.5	12.8	12.8	12.2	9.4	8.8	15.7	17.4	25.4	26.6	55.0	24.3	
	Effluent													8.8	10.4	11.6	10.8	15.0	11.9	
Total Kjeldahl Nitrogen (mg/L)	Influent	NA	3.04	NA	2.38	NA	2.58	NA	2.74	NA	2.01	NA	3.74	6.3	7.7	12.1	11.5	27.4	10.2	
	Effluent													2.4	1.6	NA	3.6	13.0	2.3	
Ammonia-Nitrogen (mg/L)	Influent	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	NA	<1.0	<1	<1	<1	<1	<1	<1	
	Effluent													<0.01*	1*	<0.01*	<0.01*	10.9*	<1	
Nitrate Nitrogen (mg/L)	Influent	4.7	3.5	4.0	5.8	7.4	6.8	6.4	3.6	8.3	6.8	5.8	6.2	0.54	0.28	0.49	0.54	0.20	0.15	
	Effluent													0.20	0.54	6.9	5.8	0.20	6.2	
Nitrite Nitrogen (mg/L)	Influent	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	0.011	<0.01	<0.01	0.041	<0.01	0.01	0.01	0.023	<0.01	
	Effluent													0.01	<0.01	<0.01	<0.01	<0.01	0.027	
Total Phenols (ug/L)	Influent	5.4	8.0	10.4	9.4	10.6	8.0	8.0	12.6	11.2	12.0	13.1	15.4	129.7	104.9	165.5	300	277.3	326.2	
	Effluent													4.0	7.4	6.6	5.4	3.4	6.0	
Phosphorus (Total) (mg/L) (Filtered)	Influent	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.3	0.51	0.64	0.79	0.31	0.78	
	Effluent													0.32	0.18	0.45	0.65	0.13	0.54	
Oil and Grease (mg/L)	Influent	NA	7†	NA	6†	NA	7†	NA	7†	NA	7†	NA	6†	18.4†	12.1†	9.3†	6.5†	14.9†	10.4†	DET.
	Effluent													8†	5†	5†	9†	6†	6†	LIMIT
Metals																				
Arsenic (ug/L)	Influent	6	3	5	5	5	6	4	5	4	5	5	3	4	4	3	5	4	5	
	Effluent													7	5	5	4	8	3	1
Cadmium (ug/L)	Influent	3	ND	ND	1	ND	ND	2	ND	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	Effluent													ND	ND	ND	ND	ND	ND	1
Chromium (ug/L)	Influent	22	2	3	2	43	2	6	3	1	1	3	1	5	2	2	2	5	4	
	Effluent													2	2	2	1	2	1	1
Copper (ug/L)	Influent	7	9	8	9	10	5	5	9	10	180	10	12	23	13	7	8	17	10	
	Effluent													13	6	2	6	3	1	1
Iron (ug/L)	Influent	270	310	110	190	330	170	90	165	190	150	180	150	2230	770	730	690	1560	850	
	Effluent													520	99	94	77	310	99	30
Lead (ug/L	Influent	10	5	4	5	30	2	2	2	1	5	2	2	13	5	3	2	10	7	
	Effluent													19	3	2	1	2	2	1
Mercury (ug/L)	Influent	.08	.06	.06	.05	.06	.06	.06	.05	ND	ND	ND	.05	0.05	ND	0.12	0.08	0.07	ND	
	Effluent													0.05	0.13	0.20	0.08	0.05	0.05	0.05
Nickel (ug/L)	Influent	8	3	8	4	46	4	5	6	8	10	10	10	9	3	2	1	6	8	
	Effluent													3	5	1	1	6	5	1
Zinc (ug/L)	Influent	39	38	28	37	32	26	30	26	66	57	50	34	120	36	36	22	74	44	
	Effluent													38	27	23	16	ND	110	10

NA = Not Analyzed

ND = Not Detected

* = Analyzed using specific ion electrode method (Refer to Appendix C).

† = Oil and grease concentrations reported may be higher than actual values (Refer to Appendix F).

5.1.1 Total Suspended Solids

Although the refineries were below requirements, one reported an increase in suspended solids discharges since 1985, while six reported a decrease. Total discharges declined by 476.2 kilograms/day (from 1879 kilograms per day to 1402.8 kilograms per day) from 1985 to 1986 .

5.1.2 Phenolics

Six of the seven refineries reported a decrease in discharges of phenolics since 1985 and one reported an increase. Total discharges of phenolics decreased from 3.1 kilograms per day in 1985 to 1.42 kilograms per day in 1986 (a decrease of 1.68 kilograms/day).

5.1.3 Ammonia-nitrogen

Four plants reported a decrease in ammonia-nitrogen discharges and three reported an increase. The total discharges in 1986 (157.85 kilograms) were 16.05 kilograms per day higher than the total for 1985 (141.8 kilograms).

5.1.4 Solvent Extractables (Oil and Grease)

Oil and grease discharges were lower for four of the seven refineries in 1986 than they were in 1985. The other three refineries discharged more. Total discharges decreased by 6.9 kilograms per day (377.2 kg/day in 1986 compared to 384.1 kg/day in 1985).

5.1.5 Trace Contaminants

To provide additional information on treated petroleum refinery effluents, Canviro Consultants were hired to study effluents from two Ontario refineries, the ESSO Petroleum Canada Refinery (Sarnia) and the Petro-Canada Trafalgar Refinery (Oakville). The Petroleum Association for Conservation of the Environment (PACE) paid for this study. A working group of the MISA Joint Technical Committee supervised the consultant. The study results were presented to and reviewed by the Joint Technical Committee. This report "Sampling and Analysis of Refinery Effluents to Assess Variations In Trace Contaminant Concentrations" documents the capability of biological treatments to effect trace contaminant removal from petroleum effluents. This study is a snapshot of the variablity in effluent quality from well operated biological treatment processes (Table 6, page 37 shows an example from this study) . A preprint is available from the Ministry.

The treated effluent quality was similar at both refineries with respect to trace volatile organics and trace base neutral extractables in spite of the differences between these two refineries. This similarity was consistent with the results reported in other previous studies of treated petroleum refinery effluents. However, the conventional analyses do confirm the differences in the effluent treatment systems.

	ESSO	PETRO-CANADA
PROCESS COMPLEXITY	One of the most complex in Canada.	Typical petroleum fuel producer
TREATMENT SYSTEM		
- nitrifying	Yes	No
- solids rentention time	High	Low

The following table from the Canviro study shows the range in parts per billion of the volatile organics and base neutral extractable organics at the ESSO Refinery in Sarnia.

5.2 PULP AND PAPER INDUSTRY STATUS

The 1968 OWRC objectives proposed for this industry still apply. The quality of the effluent is judged by three pollutant parameters - Total Suspended Solids, Biochemical Oxygen Demand (BOD) and the acute fish toxicity test.

The industry consists of chemical pulping mills (kraft, sulphite, etc.), mechanical pulping mills (stone groundwood, thermo-mechanical, chemi-mechanical, etc.), papermaking mills, (no pulping at all), deinking mills (used paper) and recycling mills (clean used paper). Eight of twenty-eight mills discharge into drainage basins other than the Great Lakes.

The pulp and paper industry has reduced the Total Suspended Solids (bark, wood fines, knots, fibre) significantly. All mills have primary treatment to control TSS. Only seven mills in Ontario have some form of secondary treatment.

Biological treatment not only reduces biodegradable organics but absorbs some non-degradable compounds in the biomass as well. Not all organics are reduced by the same amount by biological treatment. For instance, 2,4-dichlorophenol is reduced 57% while 3,4,5-trichloroquaiacol is reduced by 98%. Both are chlorinated phenols found in kraft mill bleachery wastewaters. Biological treatment systems can be misused as a waste receptor by allowing spilled material into the system; these spills can kill the microorganisms essential for the biodegradation of organics. Good in-plant control and trained operators are essential for the proper operation of biological treatment processes.

The Ministry is considering the U.S. approach to setting a limit on organic compounds in pulp and paper effluent as measured by the BOD test. Table 7 (page 40) provides a comparison of the actual discharges with various requirements. The U.S. EPA value is the calculated BOD limit achievable by secondary treatment or its equivalent of in-mill and secondary treatment. Such systems usually enable a mill to pass the acute fish lethality test.

Federal allowables, whether they be set by regulation or guideline, are related to a process building block. The allowable for each building block is related to the production rate for that block. The individual allowables are summed. Using the 1985 production rate, the federal allowables have been calculated and are shown in Table 7.

TABLE 7
Pulp and Paper Comparison - Actual, Ontario, Environment Canada, US EPA (in tonnes per day)

Company	Biochemical Oxygen Demand				Total Suspended Solids			
	Act.	Ont.	E.C.	EPA	Act.	Ont.	E.C.	EPA
Abitibi-Price Iroquois Falls	47.7	69.0	37.0	5.3	5.4	9.1	11.3	8.0
Abitibi-Price Bare Pt. Thunder Bay	20.95	24.5	19.5	4.0	1.40	2.0	6.3	4.6
Abitibi-Price Ft. William Thunder Bay	10.8	14.5	11.2	0.8	1.2	2.5	4.3	1.4
Abitibi-Price Provincial Thunder Bay	3.14	7.3	6.4	0.8	1.1	2.5	5.5	1.0
Beaver Wood Fibre Thorold	2.56	2.5	2.2	0.6	1.4	0.9	2.1	0.6
Boise Cascade Ft. Frances	10.49	10 -15	34.0	3.8	4.52*	7.5	16.7	6.4
Boise Cascade Kenora	21.01	44.0	25.8	3.9	5.01	6 -12	8.4	5.9
Domtar Fine Paper Cornwall	15.1	27.7	27.7	1.8	7.9	-	17.3	2.5
Domtar Packag. Red Rock	17.2	23.0	25.5	1.7	4.04	5.5	6.0	2.7
Domtar Fine Paper St. Catharines	0.738	0.35	1.2	0.3	0.067	-	2.2	0.4
Domtar Construct. Thorold	0.77	0.45	0.8	0.08	0.18	-	0.6	0.12
Domtar Packag. Trenton	5.86	5.5	5.5	0.4	1.93	1.1	1.1	0.6
E.B. Eddy Espanola	2.19	-	35.9	9.1	5.14*	-	10.6	9.1
E.B. Eddy Ottawa	1.0	1.2	1.2	0.4	6.19	0.8	2.2	0.3

TABLE 7 (continued)
Pulp and Paper Comparison - Actual, Ontario, Environment Canada, US EPA
(in tonnes per day)

Company	Biochemical Oxygen Demand				Total Suspended Solids			
	Act.	Ont.	E.C.	EPA	Act.	Ont.	E.C.	EPA
Fraser Thorold	1.87	1.8	3.9	0.6	1.0	1.5	4.6	0.5
Great Lakes FP Dryden	2.64	-	22.0	3.9	3.33*	5.61	1.7	6.6
Great Lakes FP Thunder Bay	43.1	77.7	77.7	11.9	13.7	14.0	27.6	19.3
James River Marathon	14.3	-	22.5	2.6	2.92	9.0	3.9	2.9
Kimberly-Clark Huntsville	0.056	-	0.80	0.35	0.003	-	0.77	0.27
Kimberly-Clark St. Catharines	.464	0.36	0.79	0.32	0.0**	0.36	0.93	0.24
Kimberly-Clark Terrace Bay	29.55	42.7	-	5.9	5.4	8.5	-	10.4
MacMillan Bloedel Sturgeon Falls	38.48	10.0	16.8	2.1	2.51	3.3	2.4	1.6
Malette Pulp and Paper Inc.	7.05	10.0	15.7	1.7	2.9	4.5	4.5	2.9
Ontario Paper Thorold	7.89	18.1	34.1	4.1	6.91	6.8	9.8	6.4
Paperboard Ind. Glen Miller	2.13	-	2.2	0.4	0.53	0.14	1.7	0.5
Spruce Falls Kapuskasing	24.97	40.04	2.4	4.6	6.73	6.73	13.0	7.2
St. Mary's Paper Sault Ste. Marie	2.85	-	5.2	0.6	3.55	4.6	5.3	0.8
Strathcona Paper Strathcona	0.304	-	1.2	0.2	0.19	-	1.1	0.3

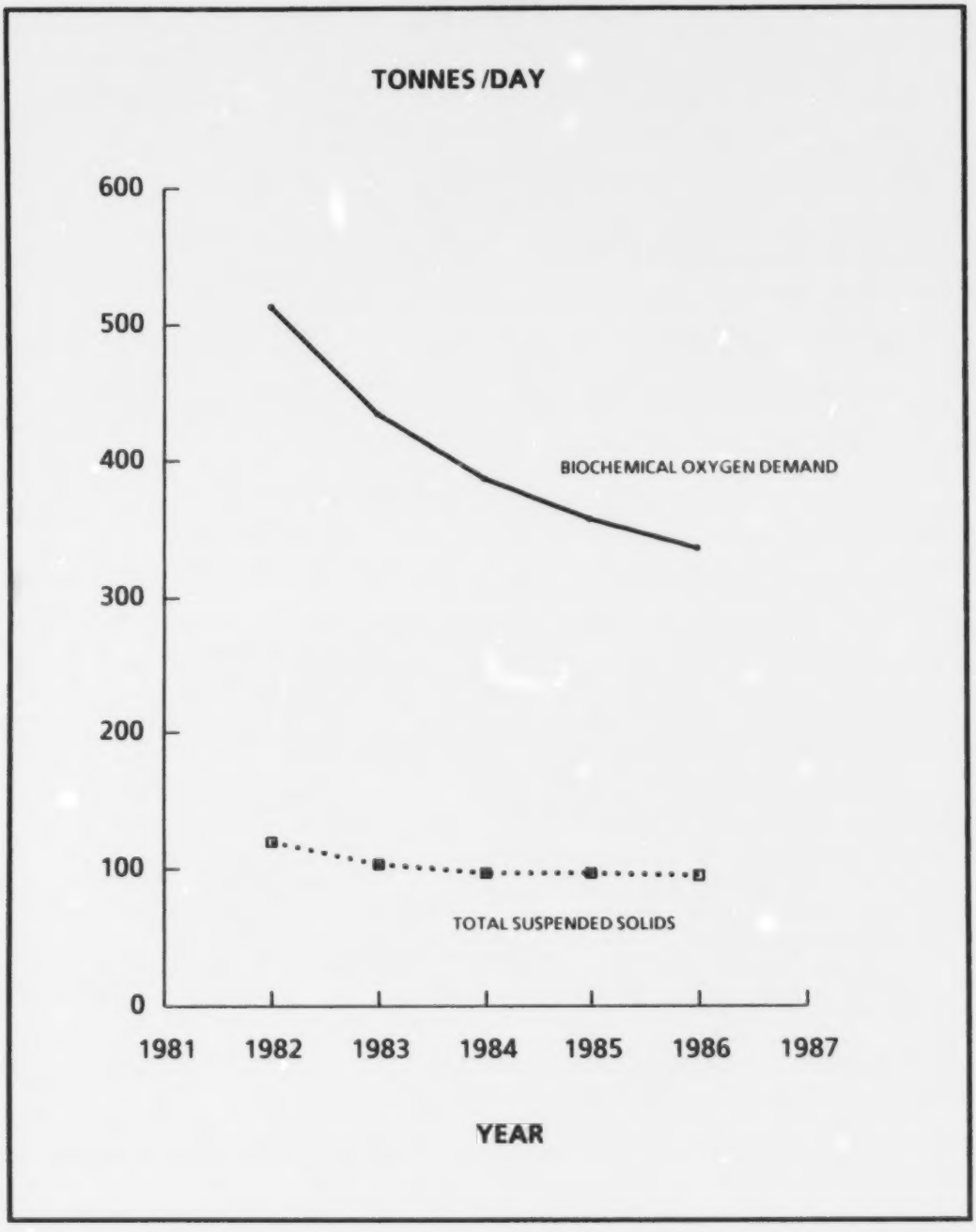
* TSS is 100% biomass. At other locations TSS are bark, wood fines or knots, pulp etc.
**Intake exceeds discharge.

E.C. = Environment Canada; 1971 Guideline limits used; assumed limit where there is a gap.
EPA = Environmental Protection Agency; New Source Performance Standard limits used.
Ont. = Ontario Requirement
Act. = Actual Annual Discharge
TSS in Ontario are bark, wood, fibre, clay, etc; in USA (*) are biomass.

FIGURE 9

PULP AND PAPER SECTOR STATUS

TWO MAJOR PARAMETERS
ONTARIO



YEARS

TABLE 8
PULP AND PAPER INDUSTRY STATUS
(all data in tonnes per day)

	TOTAL SUSPENDED SOLIDS				BIOCHEMICAL OXYGEN DEMAND			
	1983	1984	1985	1986	1983	1984	1985	1986
GREAT LAKES BASIN								
ABITIBI-PRICE INC.								
PROVINCIAL PAPERS	1.70	1.76	1.82	1.08	3.70	3.75	3.95	3.14
FORT WILLIAM	1.30	1.18	1.20	1.21	8.10	9.02	8.60	10.81
THUNDER BAY	1.10	1.15	1.26	1.40	17.90	19.60	19.00	20.93
BEAVER WOOD @ THOROLD	1.86	1.43	1.60	1.41	2.50	3.91	3.00	2.56
DOMTAR CONSTR. @ THOROLD	0.22	0.31	0.37	0.18	0.50	0.63	0.76	0.77
DOMTAR FINE PAPERS @ ST. CATHARINES	0.34	0.27	0.24	.07	0.75	0.71	0.49	0.74
DOMTAR FINE PAPERS @ CORNWALL	10.90	8.68	9.40	7.91	16.10	19.00	17.10	15.14
DOMTAR PACKAGING* @ RED ROCK	5.00	4.32	4.40	4.04	16.50	17.70	17.80	17.20
DOMTAR PACKAGING* @ TRENTON	0.40	0.46	0.59	1.93	4.50	5.04	5.34	5.86
EDDY FOREST* @ ESPANOLA	5.90	5.06	5.30	5.14	13.90	3.04	2.70	2.19
FRASER @ THOROLD	0.84	1.22	1.01	0.97	1.80	2.41	2.09	1.87
GREAT LAKES* @ THUNDER BAY	11.70	12.20	13.30	13.7	71.00	49.70	46.30	43.08
JAMES RIVER @ MARATHON	7.10	5.45	4.50	2.92	13.50	14.70	13.20	14.30
KIMBERLY CLARK* @ TERRACE BAY	6.50	6.7	25.80	5.35	36.10	36.00	34.90	29.55
KIMBERLY CLARK @ ST. CATHARINES	0.11	0.05	0.05	0.0**	0.58	0.34	0.52	0.46

* Mills have expanded since 1977
** Intake exceeds discharge.

TABLE 8 (continued)
PULP AND PAPER INDUSTRY STATUS
(all data in tonnes per day)

	TOTAL SUSPENDED SOLIDS				BIOCHEMICAL OXYGEN DEMAND			
	1983	1984	1985	1986	1983	1984	1985	1986
MacMILLAN BLOEDEL @ STURGEON FALLS	2.20	2.20	2.40	2.51	58.50	50.70	41.70	38.48
THE ONTARIO PAPER CO.* @ THOROLD	10.20	6.69	5.20	6.91	16.60	14.80	12.80	7.89
ST. MARYS PAPER @ SAULT STE. MARIE	3.40	2.53	3.20	3.55	5.90	4.80	3.60	2.85
STRATHCONA PAPER @ STRATHCONA	0.02	0.06	0.13	0.19	0.65	0.69	0.31	0.30
TRENT VALLEY PAPER-BOARD @ TRENTON	0.28	0.88	0.14	.53	-	-	1.83	2.13
SUB-TOTAL	71.07	62.62	61.91	61.00	289.08	256.54	235.99	221.25
NON GREAT LAKES BASIN								
ABITIBI-PRICE, INC. @ IROQUOIS FALLS	5.23	5.60	5.30	5.41	44.52	45.70	47.60	47.74
BOISE CASCADE CANADA LTD.								
FORT FRANCES	5.39	8.9	6.1	4.52	11.99	11.2	12.1	10.49
KENORA	6.63	6	8.7	5.01	38.68	30.4	25	21.01
E.B. EDDY FOREST PRODUCTS @ OTTAWA	.471	.56	.59	6.19	1.66	1.28	1.02	1.00
GREAT LAKES FOREST PRODUCTS @ DRYDEN	4.14	4.90	5.00	3.33	14.18	4.60	2.80	2.64
KIMBERLY CLARK @ HUNTSVILLE	-	.008	.001	-	-	.008	.008	.
MALETTE PULP & PAPER @ SMOOTH ROCK FALLS	2.71	2.30	2.40	2.92	5.40	9.60	7.80	7.05
SPRUCE FALLS POWER AND PAPER COMPANY @ KAPUSKASING	8.1	6.7	7.4	6.73	28	26.7	25.2	24.97
TOTALS	103.74	97.59	97.40	95.11	512.89	433.51	386.03	336.15

* Mills have expanded since 1977

TABLE 8 (continued)
PULP AND PAPER INDUSTRY STATUS
(all data in tonnes per day)

	1967	1982	1983	1984	1985	1986
SALEABLE PRODUCTION	7350	8552	9477	9932	**9008	xxx
					+ 3766	xxx

** Great Lakes Basin Only - estimated
+ Other Drainage Basins - estimated

1967 LOADINGS

TOTAL SUSPENDED SOLIDS	375
BIOCHEMICAL OXYGEN DEMAND	610

1973 LOADINGS

TOTAL SUSPENDED SOLIDS	126
BIOCHEMICAL OXYGEN DEMAND	470

For setting MISA contaminants lists, the pulp and paper mills will probably be put into sub-categories based on mill process technology. One possible sub-category classification follows:

A. Bleached Kraft Pulping Mills

Mallette Pulp and Paper Ltd. (formerly Abitibi-Price Inc.),	Smooth Rock Falls
Boise Cascade Ltd. (Fort Frances),	Fort Frances
Domtar Fine Papers Ltd.,	Cornwall
Domtar Packaging Ltd.,	Red Rock
E. B. Eddy Forest Products Ltd.,	Espanola
Great Lakes Forest Products Ltd.,	Dryden
Great Lakes Forest Products Ltd.,	Thunder Bay
James River Marathon Ltd.,	Marathon
Kimberly-Clark of Canada Ltd.,	Terrace Bay

B. Other Chemical Pulping (sulphite, etc) Mills

Abitibi-Price Inc.,	Iroquois Falls
Abitibi-Price, Inc. (Thunder Bay Div.),	Thunder Bay
Boise Cascade Ltd., (Kenora),	Kenora
Domtar Packaging Ltd.,	Trenton
Great Lakes Forest Products Ltd.,	Thunder Bay
MacMillan Bloedel Ltd.,	Sturgeon Falls
The Ontario Paper Company Inc.,	Thorold
Spruce Falls Power and Paper Co. Ltd.,	Kapuskasing

C. Mechanical Pulping Mills

Abitibi-Price Inc.,	Iroquois Falls
Abitibi-Price, Inc. (Thunder Bay Div.),	Thunder Bay
Abitibi-Price Inc. (Ft. William Div.),	Thunder Bay
Abitibi-Price Inc. (Provincial Papers Div.),	Thunder Bay
Boise Cascade Ltd. (Fort Frances),	Fort Frances
Boise Cascade Ltd., (Kenora),	Kenora
Domtar Construction Materials Ltd.,	Thorold
Domtar Packaging Ltd.,	Red Rock
Great Lakes Forest Products Ltd.,	Thunder Bay
The Ontario Paper Company Inc.,	Thorold
St. Mary's Paper Inc.,	Sault Ste. Marie
Spruce Falls Power and Paper Co. Ltd.,	Kapuskasing

D. Paper Making Mills (no pulping)

Domtar Fine Papers Ltd.,	St. Catharines
E. B. Eddy Forest Products Ltd.,	Ottawa
Kimberly-Clark of Canada Ltd.,	Huntsville
Kimberly-Clark of Canada Ltd.,	St. Catharines

E. Recycle Mills

Beaver Wood Fibre Company,	Thorold
Strathcona Paper Company,	Camden East Twp.
Trent Valley Paperboard Mills,	Trenton

F. De-inking Mills

Fraser Inc.,	Thorold
The Ontario Paper Company Inc.,	Thorold

Each of the six categories has at least one unique common trace contaminant feature. For instance, effluent from Bleached Kraft mills will contain chlorinated organics. Other chemical pulping mills (like sulphite) will contain some compounds specific to spent sulphite liquor. Paper making effluent will contain paper additives. Effluent which is composed of wastewaters from more than one process will contain a combination of trace contaminants.

In the U.S., the Environmental Protection Agency has set limits for thirty-three different categories of pulp and paper mills. The limit is related to the production rate for each category. These category limits have been calculated and are noted in Table 7. In the U.S., all mills have secondary or biological treatment of their effluent. EPA studied treated effluents for priority pollutants and set national limits for two slimicides and zinc. If the slimicides and zinc components are not used, no limits are set. Individual States have set, on a site specific basis, monitoring requirements in mill permits. For example, the Michigan Water Resources Commission required the Champion International Corporation kraft mill at Quinnesec to monitor for the following: benzene, ethyl benzene, toluene, xylene, chlorinated methanes, chlorinated ethanes, ethylenes, monochlorobenzenes, dichlorobenzene, chlorinated phenols, abietic acid, dehydroabietic acid, isopimaric acid, oleic acid, linoleic acid, linolenic acid, 9, 10 - eposcystearic acid, 9,10-dichlorostearic acid, monochlorodehydroabeitic acid, tetrachloroguaiacol, dichlorodehydroabeitic acid and 3,4,5-trichloroguaiacol. The JTC deliberations will lead to similar contaminant lists.

Note that TSS from Ontario mills usually consist of bark, clay, wood and fibre, while TSS from U.S. mills are bacteria and biomass from the secondary treatment process. At three Ontario kraft mills, the TSS are biomass (Dryden, Espanola and Fort Frances mills) similar to those discharged by U.S. mills.

5.2.1 Total Suspended Solids

The total discharge of TSS for all Ontario mills decreased for 1986 compared to 1985 by 7660 kilograms per day to 89,740. Of the 28 pulp and paper plants included in the inventory (Table 7), nine reported higher levels of suspended solids in 1986 over 1985 and nineteen reported lower levels. Total suspended solids discharges to the Great Lakes Basin decreased by 880 kilograms per day between 1985 and 1986 (61,910 kilograms compared to 61,030).

5.2.2 Biochemical Oxygen Demand

The total discharge of BOD for all Ontario mills for 1986 decreased by 49,650 kilograms per day compared to 1985. Nineteen of the 28 plants reporting BOD levels indicated a decrease in 1986 and nine indicated an increase. The 1986 BOD levels decreased by 14,650 kilograms per day (221,340 kilograms in 1986 compared to 235,990 kilograms in 1985) for the sources discharging to the Great Lakes Basin.

5.2.3 DIOXINS AND FURANS

In October, 1985, the U.S. EPA released some of the analytical results from a national dioxin survey. Dioxin was found in fish downstream of two bleached kraft mills and in their sludges. Since questions were raised about the analytical protocols, EPA and the pulp and paper industry decided to undertake a joint study.

As of August 1987, the U.S. EPA/Paper Industry Co-operative Dioxin Screening Study has determined the presence and sources of dioxins, including 2,3,7,8-TCDD and furans at bleached kraft pulp and paper mills. In addition, they have recently sampled Boise Cascade Canada in Fort Frances, Ontario.

Neither U.S. EPA nor industry have commented on the findings at this time; the final report is due in October 1987.

The preliminary findings are that 2,3,7,8-TCDD has been

(a) confirmed in landfill leachate in the low parts per quadrillion
(b) identified in bleached kraft pulp in the low parts per trillion

(c) identified in low parts per quadrillion in the treated effluent
(d) confirmed in the effluent sludge in the parts per trillion (because both dioxins and furans are being identified and quantified, much difficulty is being encountered in the verification of these sludge results).

The Ministry reacted to these new findings by starting its own investigations. In March, 1986, MOE sampled 18 sludges and 7 effluents from Ontario mills for dioxin/furan analysis. The results were released July 17, 1986 (see Appendix G).

The Laboratory Services Branch is currently (August, September, October, 1987) analysing Ontario kraft mill effluent for 2,3,7,8-TCDD. A 100 litre sample is centrifuged to remove the solids which are analysed separately.

The Laboratory Services Branch has been requested (September, 1987) by the U.S. National Council for Air and Stream Improvement in the pulp and paper industry to analyse sludge samples for 2,3,7,8-TCDD. These sludge samples are from the U.S./industry co-operative study.

The Laboratory Services Branch plans to start a round-robin dioxin survey with private laboratories using samples from Ontario mills this fall. The U.S.A. analytical protocols, yet unpublished, will be used in this round-robin.

5.3 STEEL INDUSTRY STATUS

Effluent quality for the primary steel producers is indicated by four parameters: ammonia-nitrogen, phenols, total suspended solids and oil and grease (solvent extractables). The rate of progress is somewhat fixed by the nature of steel producing technology - large batch operations, equipment that lasts forty years, etc. - and the cyclic market demand for steel products.

5.3.1 Ammonia

Two of the four companies listed (Table 8) reported a decrease in ammonia discharges over 1985 and two companies reported an increase. Total ammonia discharges in 1986 were lower than 1985 discharges by 128 kilograms per day (4,627 kilograms compared to 4,755 kilograms).

5.3.2 Phenolics

Three companies reported an increase in discharges of phenolics between 1985 and 1986; and one a decrease. Total discharges of phenolics for 1986 were 18.5 kilograms per day higher than they were in 1985 (159.5 kilograms compared to 141.0 kilograms).

5.3.3 Suspended Solids

One location reported a decrease in suspended solids discharges between 1985 and 1986 and three reported an increase. The 1986 total was 5,346 kilograms per day higher than the 1985 total (41,681 kilograms compared to 36,335 kilograms).

TABLE 9
STEEL INDUSTRY STATUS
(all data in kilograms per day)

	AMMONIA				PHENOLICS			
	1983	1984	1985	1986	1983	1984	1985	1986
ALGOMA STEEL CORP. @ SAULT STE. MARIE	3160	3490	4002	3993	101.00	99.00	102.00	96.45
DOFASCO @ HAMILTON	970	1140	592	477	16.00	14.60	8.04	11.11
STELCO @ HAMILTON	570	525	156	134	69.00	43.00	31.40	42.9
STELCO @ NANTICOKE*	6	6	4.83	8.66	0.058	0.07	0.04	0.08
TOTALS	4710	5160	4755	4613	186.0	157.00	141.00	150.54

* NEW STEEL FACILITY BUILT IN 1979-1981

	SUSPENDED SOLIDS				OIL & GREASE			
	1983	1984	1985	1986	1983	1984	1985	1986
ALGOMA STEEL CORP. @ SAULT STE. MARIE	7830	7760	8580	9265	1610	1570	1880	1954
DOFASCO @ HAMILTON	12500	18100	11800	10515	210	464	837	55
STELCO @ HAMILTON	12300	18800	15500	19129	1370	3240	2170	4579
STELCO @ NANTICOKE*	280	285	455	405	22	38	69	98.67
TOTALS	32900	44900	36335	39314	3230	5340	4939	6687

* NEW STEEL FACILITY BUILT IN 1979-1981

TABLE 9 (continued)
STEEL INDUSTRY STATUS
(all data in kilograms per day)

	CYANIDE				IRON			
	1983	1984	1985	1986	1983	1984	1985	1986
ALGOMA STEEL CORP. @ SAULT STE. MARIE	127.0	75.0	70.6	62.6	3490	3490	4104	4685
DOFASCO	39.0	31.3	21.1	53.0	2470	3550	3800	4698
STELCO @ HAMILTON	99.01	52.0	46.5	70.9	4630	5580	2750	2521
STELCO @ NANTICOKE*	1.6	1.7	0.19	2.73	23	17	22.9	22.04
TOTALS	267.0	260.0	138.39	189.23	10610	12600	10677	11916

* NEW STEEL FACILITY BUILT IN 1979-1981

YEAR	1983	1984	1985	1986
FINISHED PRODUCT IN TONNES	10,800,000	9,800,000	11,872,000	9,021,000

1967 TOTALS (KILOGRAMS/DAY)

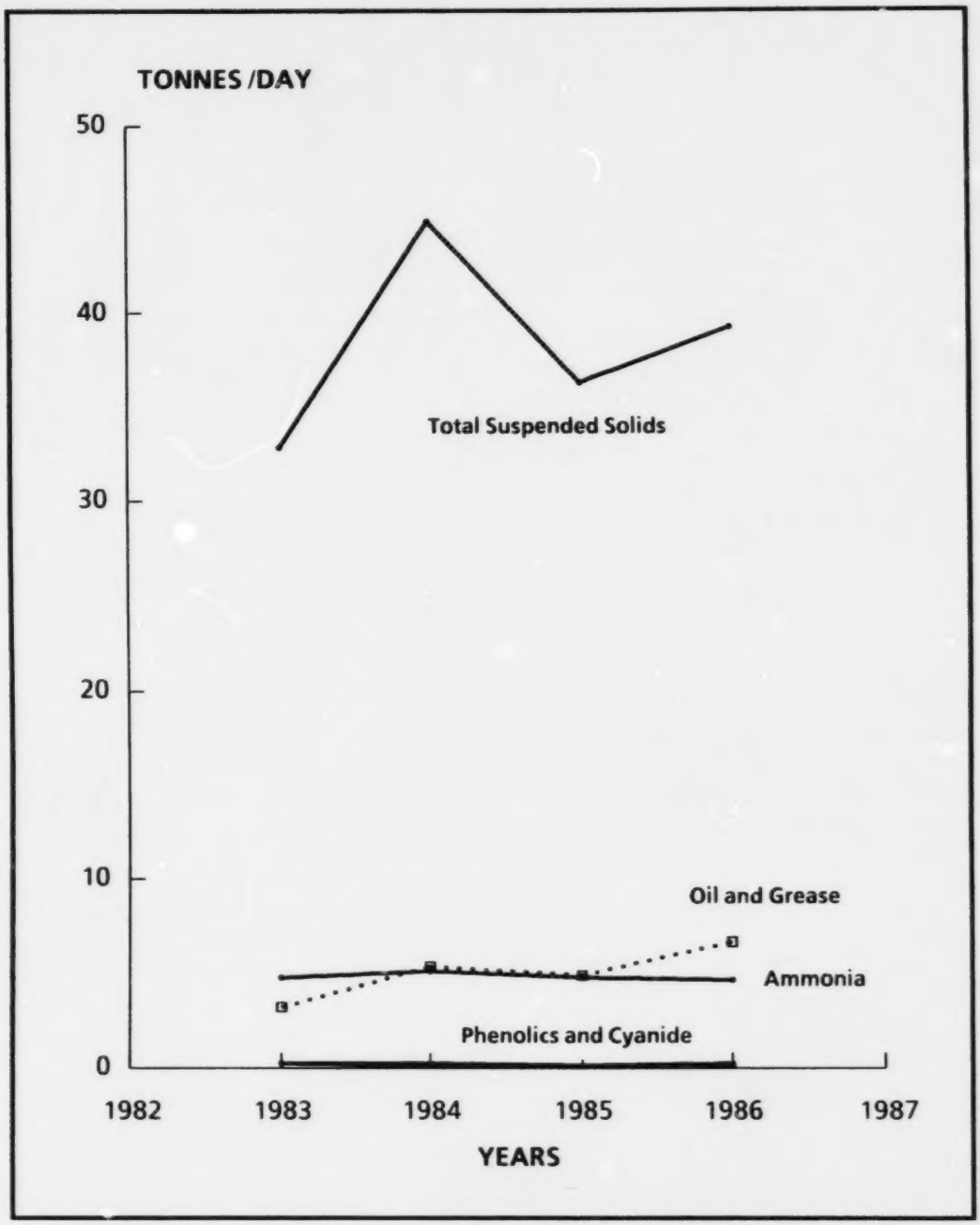
AMMONIA	23000
SUSPENDEDSOLIDS	126000
PHENOLICS	2730
OIL & GREASE	30000
CYANIDE	2370

FIGURE 10

STEEL SECTOR STATUS

FIVE MAJOR PARAMETERS

ONTARIO



5.3.4 Oil and Grease

Three locations reported higher discharges of oil and grease (solvent extractables) in 1986 and one reported lower levels. The total discharge for 1986 was 1,873 kilograms per day higher than the 1985 total (6,812 kilograms compared to 4,939 kilograms).

5.3.5 Cyanide

At three locations, the reported cyanide discharges increased between 1985 and 1986. The reported cyanide discharge was lower at the fourth location. For 1986, the cyanide discharge was higher by 50.8 kilograms per day over the previous year (189.15 kilograms per day for 1986 and 138.39 kilograms per day for 1985).

Table 10 - Steel Effluent Volumes 1985

OLD/ NEW	COMPANY/LOCATION	TONNES PER YEAR NOMINAL CAPACITY	EFFLUENT CUBIC METRES PER DAY	EFFLUENT TO PRODUCTION CAPACITY RATIO
Old	Stelco at Hamilton	5,261,650	1,183,000	0.225
Old	Dofasco at Hamilton	4,115,810	804,000	0.195
Old	Algoma Steel at Sault Ste. Marie	3,600,000	503,700	0.140
New	Stelco at Nanticoke	1,164,800	32,400	0.028

It is more difficult and much more costly for older existing plants than for new plants to remove pollutants. In general, a smaller volume is easier to correct and control as shown in the previous table. In existing steel plants, the wastewaters are not well segregated as to the type of pollutants; similar pollutants can best be treated by a specific process. Effective treatment of mixed pollutants and variable flows is costly.

6.0 SELF MONITORING REQUIREMENTS AND AUDIT PROCESS

All of the plants included in this report monitor their own discharges. At present, the vast majority of Ontario sources monitor their effluents on a voluntary basis, although recently a start has been made to specify monitoring requirements in Certificates of Approval, Control Orders and Requirement and Direction. However, Ontario chlor-alkali plants must comply with the monitoring and reporting requirements of the Federal Chlor-alkali Regulations. To ensure that the self monitoring data are accurate, the Ministry of the Environment takes random audit samples.

Both the federal and Ontario agencies have monitoring and reporting requirements. While petroleum refineries, pulp and paper plants and chlor-alkali plants must comply with both federal and Ontario requirements, all other industries must comply only with Ontario monitoring requirements.

The following is a description of the Ministry's audit programs:

The Ministry of the Environment conducted audits of industry supplied data on effluents throughout 1986. Over 90% of the companies reported herein had independent (MOE) analyses conducted. Four methods of auditing were applied.

1. 24-Hour Composite samples were split between the source and the Ministry, and results were compared.

2. Grab samples were split between the source and the Ministry, and the samples were compared.

3. Random samples were taken by the Ministry and the results were compared to the industry's reported results for an adjacent period.

4. In some cases, where conditions warranted, intensive cross-industry audits were done.

The audit indicated that the industry supplied data were basically in agreement with the independent checks. Differences were mostly attributed to errors resulting from variable analytical techniques or storage time.

In cases where the data did not agree, discussions between the laboratories took place to resolve discrepancies.

For 1987, protocols are established to:

1. Formalize the audit procedure to ensure that opportunities for discrepancies to occur are reduced.

2. Prepare for the more intensive reporting/auditing procedures that will occur as a result of MISA initiatives.

A weakness in the present reporting system concerns the reporting of flows. It is extremely difficult to accurately check loading information without an indication of the reliability of the flow information or the time consuming practice of independently checking the accuracy of the flow information. It is important that the Ministry have an accurate flow measurement. Where Control Orders and/or Certificates of Approval do not require flows to be reported within defined error limits, the Ministry of the Environment will be requiring increased reliability on a sector by sector basis under the MISA program.

For specific audit information on any source, contact the District Office noted on the respective Wastewater Discharge Summary sheet.

A more intensive audit is being undertaken in 1987. It is planned that the audit data for 1987 will be presented and appended to the report. Adequate resources for collecting analytical data and checking on flow information continues to be a limiting factor.

6.1 Enforcement Actions

A new Branch of the Ministry of the Environment, Investigations and Enforcement, was formed in 1985. Regional staff refer incidents, etc., to this Branch for investigation and possible follow-up with prosecution. Note that exceedance of a monthly average requirement does not necessarily mean that charges are laid.

For all water related offences which occurred in 1986, a total of eight prosecutions were initiated. As of April 1987, two of these cases were still before the courts and five had been concluded, resulting in three convictions and fines totalling $48,500.

TABLE 11
1986 WATER RELATED OFFENCES
FOR WHICH CHARGES HAVE BEEN LAID

COMPANY	OFFENCE DATE AND DESCRIPTION	DISPOSITION
1. Dow Chemical Canada Inc. Sarnia Southwest Region	- Feb. 28/86 - spill of ethylene dichloride (EDC) causing elevated levels of EDC in the St. Clair River.	Trial Nov. 4/86 Convicted and fined $2,500 each for two charges under S.16(1) of OWRA. TOTAL $5,000
2. Polysar Ltd. Sarnia Southeast Region	Mar. 1/86 - discharge of 14,000 US gallons of untreated effluent into the St. Clair River	Trial Nov. 19/86 Convicted and fined $5,000 for one S.16(1) charge under OWRA.
3. Teck-Corona Operating Corporation, Marathon Northwest Region	Between March 7 and April 8/86 - discharge of sedimentation pond water containing cyanide into Cedar Creek.	Trial Oct. 15/86 Convicted and fined $15,000 for S. 16 (1) charge and $5,000 for S.24(5) charge. TOTAL $20,000.
4. Lac Minerals Marathon Northwest Region	Mar.13/86 - discharge of reclaim water containing cyanide (at 11.8 ppm concentration) into Cigar Lake	Trial Aug. 28/86 Convicted and fined $15,000 under S.16(1) & S.24 of OWRA
5. Wickes Manufacturing Company Ltd. Windsor Southwest Region	March 28/86 - discharge of wastewater with high levels of chromium into the Little River.	Trial set for Oct. 20 - 23/87
6. Ford Motor Co. of Canada Ltd Windsor Southwest Region	Aug. 7 and 10/86 - discharging oil to the Detroit River	Trial set for Dec. 9 - 11/87
7. The Algoma Steel Corporation Limited Sault Ste. Marie Northeast Region	Sept. 15 - 16/86 - discharge of process effluent iron hydroxide, into the St. Mary's River.	To set a date for trial July 17/87
8. Weldwood of Canada Limited, Longlac Northeast Region	Nov. 20, 1986 - discharge of effluent from thaw pond into a drainage ditch leading to the Making Ground River.	Trial June 10/87 Convicted and fined $3,500 for S.16(1) charge.

7.0 DATA COLLECTION SYSTEM (IMIS)

The Industrial Monitoring Information System (IMIS), an electronic storage and retrieval program, was used to collect data for the annual discharge reports. Discharge data from the industrial plants were first submitted to the Ministry of the Environment District Offices, which in turn, transferred the data to the IMIS. Master data files are maintained at the Downsview Computer Centre (DCC) in Toronto and information can be retrieved by the Regional Offices as well as the Head Office. Monthly averages, as reported in Appendix A, were taken from the IMIS data banks.

8.0 ENQUIRIES

Enquiries about a specific source's effluent loadings and status of abatement may be directed to:

- the owner of the source
- Ministry's Regional Office or District Offices.

Ministry addresses are provided at the end of the report (Appendix H).

Copies of this report are available from:

Director,
Communications Branch
Ministry of the Environment
135 St. Clair Ave. West (6th Floor)
Toronto, Ontario
M4V 1P5
(416) 323-4324

Enquiries concerning the toxicity section and test results in this report may be directed to the:

Aquatic Toxicity Unit
Water Resources Branch
125 Resources Road
Rexdale, Ontario
(416) 235-5797 or 235-5806

Enquiries concerning this report and the industrial abatement program may be directed to the:

Manager, Project and Data Management Section
MISA Office
Water Resources Branch
1 St. Clair Avenue West (4th Floor)
Toronto, Ontario
(416) 323-4886

Appendix A

Wastewater Discharge Summary Sheets

The tables in Appendix A have been printed directly from the Industrial Monitoring Information System (IMIS). The following example shows the format used for chemical parameters:

PHOSPHOR UNF. TOT
KG/DAY (PPUT)

PHOSPHOR UNF. TOT is 'phosphorus unfiltered total'. Some of the chemical parameter names are abbreviated due to lack of space in the name field in the IMIS data base.

The following list shows parameter names which have been abbreviated or changed substantially from previous years. **Column A** shows those chemical parameter names as they appear in this report while **Column B** shows the same parameter as it appeared in previous industrial discharge reports.

Column A	Column B
BOD 5	BIOCHEMICAL OXYGEN DEMAND
CHEM. OX. DEMAND	CHEMICAL OXYGEN DEMAND
K'DAHL N	KJELDAHL NITROGEN
NH3-N	AMMONIA NITROGEN
NH4-N	AMMONIUM ION
NO2 + NO3N	NITRITES AND NITRATES
NO3-N	NITRATES
PO4	PHOSPHATES
RESIDUE FILTERED	DISSOLVED SOLIDS
RESIDUE PARTIC.	SUSPENDED SOLIDS
RESIDUE TOTAL	TOTAL SOLIDS
SOLVENT EXTRACT.	OIL AND GREASE
TEMP RISE	TEMPERATURE RISE

KG/DAY in this example is kilograms per day and represents a loading value. Other units used are M3 /DAY (cubic metres day) for flow and MG/L (milligrams per litre) for concentration.

(PPUT) is the Ministry Laboratory parameter code for 'phosphorus unfiltered total'. Further informaton on parameter codes used in the discharge data tables is available from:

Laboratory Services Branch,
Laboratory Computer Systems -
Quality Assurance Section.
125 Resources Road
Rexdale, Ontario
M9W 5L1
Phone: (416) 235-5840

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Abitibi-Price Inc. INDUSTRIAL SECTOR: Pulp and Paper Mill
& PLANT LOCATION: Iroquois Falls

RECEIVING WATERBODY: DIRECT: Abitibi River
INDIRECT: Moose River to James Bay

DESCRIPTION OF ACTIVITY: Logs and wood chips (softwoods - black spruce, jack pine, balsam fir) are converted into newsprint by two different processes - stone groundwood and sulphite. The newsprint is brightened by hydrosulphite.

EFFLUENT QUALITY: Contains suspended solids (bark, wood, paper) and a variety of organic compounds in the spent sulphite cooking liquor.

EFFLUENT TREATMENT: In-mill screens remove some bark and groundwood fibre prior to the clarifiers. Two clarifiers are used to remove solids.

DISCHARGE TYPE: Continuous outfall.

COMMENTS:

In 1986 company was in compliance with Control Order. Control Order specifies a BOD5 limit of 69 tonnes/day averaged over 30 consecutive working days. Control Order specifies a Suspended Solids limit of 9.1 tonnes/day averaged over 30 consecutive working days and a maximum daily limit of 18.2 tonnes/day.

Bioassays conducted in 1986 indicated that the final effluent was toxic to fish. Three bioassays estimated that it would take, statistically, 20.7%, 20.1%, and 12.5% effluent to kill 50% of the fish by the end of the four day exposure.

IMIS NO.: 0000860403 SIC CODE: 031 271 MOE REGION: Northeast DISTRICT: Timmins

10/06/87

000086-04-0(3) ABITIBI-PRICE INC IROQUOIS FALLS MILL

REPORT DATE: 25 JUN 87

CONTROL POINT: 0100 DATA FOR 1986

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	50666.00	50290.00	54271.00	52136.00	57674.00	50317.00	51430.00	58316.00	54011.00	53958.00	54253.00	50483.00	53150.42	
M3 /DAY (FTFLOW)	GUIDELINE														
BOD 5 DAY	ACTUAL	45000.00	46200.00	57200.00	44900.00	52200.00	41100.00	41200.00	46800.00	48400.00	48900.00	53300.00	47700.00	47741.60	
KG /DAY (BOD5)	REQUIREMENT	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	
RESIDUE PARTIC.	ACTUAL	5100.00	5500.00	5400.00	6200.00	4400.00	5500.00	4600.00	4700.00	6000.00	6100.00	6500.00	4900.00	5408.33	
KG /DAY (RSP)	REQUIREMENT	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	

NOTE: PH LIMIT 5.5-9.5, 0* INDICATES INTAKE EXCEEDED DISCHARGE, S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Abitibi-Price Inc.
& PLANT LOCATION: Fort William Division
Thunder Bay

INDUSTRIAL SECTOR: Pulp and Paper Mill

RECEIVING WATERBODY: DIRECT: Lake Superior (Thunder Bay)
INDIRECT:

DESCRIPTION OF ACTIVITY: Newsprint is made from softwood (black spruce, balsam fir, jack pine) logs and chips by using the stone groundwood and Sulphonated Chemical Mechanical processes. Newsprint is brightened by hydrosulphite.

EFFLUENT QUALITY: Contains suspended solids (bark and wood fibre) and organic compounds from the pulping processes.

EFFLUENT TREATMENT: Clarifier and a lagoon handle woodroom effluent. Two settling lagoons handle the rest of the mill effluent.

DISCHARGE TYPE: two continuous surface discharges

COMMENTS:

In compliance. Effluent quality met Ministry requirements. A Control Order was issued on April 29, 1985. The company is required to meet specific BOD and TSS loadings on the total mill effluent discharged (BOD - 42.5 kg per metric ton of product produced or alternatively 14.5 metric tons per day averaged over any 30 consecutive working days and Suspended Solids of 50 mg per litre or alternatively 2.5 metric tons per day averaged over any 30 consecutive working days). In addition, the company is required to study sources of toxicity in mill effluent.

The combined final effluent is toxic to fish. Two trout bioassays conducted in 1986, indicated that it would take , statistically , 45.6 %, and 45.6 % effluent to kill 50 % of the fish by the end of the four day exposure.

IMIS NUMBER: 0000860205 SIC CODE: 271 MOE REGION: Northwest DISTRICT: Thunder Bay

25/08/87

000086-02-0(S) ABITIBI-PRICE FORT WILLIAM DIV.

REPORT DATE: 26 AUG 87

CONTROL POINT: 0100 DATA FOR 1986

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	23972	21098	20773	23657	22920	25600	26427	23018	24098	25531	25830	23600	23877	
M3 /DAY (FTFLOW)	GUIDELINE														
BOD 5 DAY	ACTUAL	13210	10490	10740	12270	9400	8980	8693	9152	10830	10445	12600	12900	10809	
KG /DAY (BOD5)	REQUIREMENT	14500	14500	14500	14500	14500	14500	14500	14500	14500	14500	14500	14500	14500	
PHOSPHOR UNF.TOT.	ACTUAL	8.8	11.0	9.4	13.8	14.7	13.0	14.5	19.4	16.1	16.7	19.1	16.8	14.4	
KG /DAY (PPUT)	GUIDELINE	24.0	21.1	20.8	23.7	22.9	25.6	26.4	23.0	24.1	25.5	25.8	23.6	23.9	
RESIDUE PARTIC.	ACTUAL	1900	1250	1135	1030	775	870	798	1044	1216	1257	1470	1780	1210	
KG /DAY (RSP)	REQUIREMENT	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Abitibi-Price Inc.
& PLANT LOCATION: Thunder Bay Division
Thunder Bay

INDUSTRIAL SECTOR: Pulp and Paper Mill

RECEIVING WATERBODY: DIRECT: Lake Superior (Thunder Bay)
INDIRECT:

DESCRIPTION OF ACTIVITY: Softwood (black spruce, balsam fir, jack pine) logs are made into newsprint by the stone groundwood and sulphite pulping processes. Hydrosulphite is used to brighten newsprint.

EFFLUENT QUALITY: Contains suspended solids (bark and wood fibre) and many organics (mainly the spent sulphite cooking liquor).

EFFLUENT TREATMENT: A woodroom clarifier and two parallel lagoons (2.75 acres each) remove solids.

DISCHARGE TYPE: continuous surface

COMMENTS:

In compliance. Two monthly BOD exceedances of the 24.5 metric tonnes/day requirement were recorded. The January exceedance is due to company laboratory error which Ministry audit sampling confirmed to be 15 percent high. There were no exceedances of the alternate BOD requirement of 57 kg per metric tonne of product. A Control Order was issued on April 29, 1985. The company is required to meet specific BOD and TSS loadings in the total mill effluent discharged (BOD - 24.5 metric tonnes/day or 57 kg per metric tonne of product and TSS - 2.0 metric tonnes/day or 50 milligrams per litre). In addition, the company is required to study soureces of toxicity in the mill effluent.

A bioassay conducted in 1986 indicated the final effluent was toxic to fish. Statistically, it would take 21.4% effluent to kill 50% of the fish by the end of the four days exposure.

IMIS NUMBER: 0000860007 SIC CODE: 271 MOE REGION: Northwest DISTRICT: Thunder Bay

25/08/87

000086-00-0(7) ABITIBI-PRICE THUNDER BAY DIV.

REPORT DATE: 26 AUG 87

CONTROL POINT: 0100 DATA FOR 1986

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	46266	36290	36598	36585	25696	32734	34717	35081	35780	38947	38561	37628	36240.3	
M3 /DAY (FTFLOW)	GUIDELINE														
BOD 5 DAY	ACTUAL	27300	19700	23900	22300	10800	18800	19500	18900	22000	24700	22400	20900	20933.3	
KG /DAY (BOD5)	REQUIREMENT	24500	24500	24500	24500	24500	24500	24500	24500	24500	24500	24500	24500	24500	2
PHOSPHOR UNF.TOT.	ACTUAL	12.26	12.81	13.47	17.19	6.78	6.97	11.1	8.07	12.88	13.24	14.65	11.29	11.7258	
KG /DAY (PPUT)	GUIDELINE	46.3	36.3	36.6	36.6	25.7	32.7	34.7	35.1	35.8	38.9	38.6	37.6	36.2	
RESIDUE PARTIC.	ACTUAL	1840	1440	1590	1340	840	1190	1530	1290	1490	1360	1310	1590	1400.83	
KG /DAY (RSP)	REQUIREMENT	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Agnico Eagle Mines Ltd. (Penn Mill)
& PLANT LOCATION: Cobalt

INDUSTRIAL SECTOR: Metal Mining, Smelting, Refining

RECEIVING WATERBODY: DIRECT : Giroux Lake
INDIRECT: 8 km from Montreal R.

DESCRIPTION OF ACTIVITY: Gravity and flotation concentrates produced from silver ore.

EFFLUENT QUALITY: Contains dissolved metal salts of silver, cobalt, copper etc.

EFFLUENT TREATMENT: Tailings impoundment in former lake basin (Glen Lake).

DISCHARGE TYPE: Continuous

COMMENTS:

Mill burned to ground during winter 1985-86 - Under construction during 1986. Loading limits are based on guidelines for Ontario mining industry. Mill startup is scheduled for July 1987. Improvements to the tailings impoundment area are scheduled for completion by the end of 1987. Arsenic exceedances should be minimized by improved tailings impoundment. Minor iron exceedances are unexplainable.

IMIS NO.: 0001520006 SIC CODE: 0593 295 MOE REGION: Northeast DISTRICT: North Bay

03/06/87

000152-01-0(5) AGNICO EAGLE MINES LIMITED SILVER DIVISION PENN MILL
CONTROL POINT: 0100 DATA FOR 1986

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW M3 /DAY (FTFLOW)		2600	2600											2600	
ARSENIC UNF.TOT. KG/D (ASUT)	ACTUAL	1.12	1.40											1.26	
	GUIDELINE	1.30	1.30											1.30	1
COBALT UNF.TOT. KG/D (COUT)	ACTUAL	>.26	>.26												
	GUIDELINE	2.6	2.6												
COPPER UNF.TOT. KG /DAY (CUUT)	ACTUAL	>.26	>.26												
	GUIDELINE	2.6	2.6												
IRON UNF.TOT. KG/D (FEUT)	ACTUAL	0.49	2.78											1.64	
	GUIDELINE	2.60	2.60											2.60	1
NICKEL UNF.TOT. KG/D (NIUT)	ACTUAL	>.26	0.33												
	GUIDELINE	2.60	2.60												
PH (PH)	ACTUAL	8.27	8.05											8.16	
	GUIDELINE														

NOTE: PH LIMIT 5.5-10.6. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Agnico Eagle Mines Ltd. (Refinery)
& PLANT LOCATION: Cobalt

INDUSTRIAL SECTOR: Metal Mining, Smelting, Refining

RECEIVING WATERBODY: DIRECT : 5.5 km from Farr Creek
INDIRECT: 109 km from Montreal R.

DESCRIPTION OF ACTIVITY: Refining and smelting of silver concentrates.

EFFLUENT QUALITY: Contains dissolved metal salts of silver, cobalt, copper, arsenic etc.

EFFLUENT TREATMENT: Cyanide destruction

DISCHARGE TYPE: Continuous

COMMENTS:

Total net arsenic exceedances were minor during May (0.54 mg/l) and June (0.84mg/l). The company is to install monitoring devices in 1987.

IMIS NO.: 0001520006 SIC CODE: 0593 295 MOE REGION: Northeast DISTRICT: North Bay

03/06/87

000152-00-0(6) AGNICO EAGLE MINES LIMITED SILVER DIVISION REFINERY
CONTROL POINT: 0100 DATA FOR 1986

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW M3 /DAY (FTFLOW)		45	45	45	45	45	45	45	45	45	45	45	45	45	
ARSENIC UNF.TOT. KG/D (ASUT)	ACTUAL GUIDELINE	0.011 0.0225	0.035 0.0225	0.015 0.0225	0.016 0.0225	0.045 0.0225	0.06 0.0225	0.025 0.0225	0.02 0.0225	0.017 0.0225	0.002 0.0225	0.016 0.0225	0.016 0.0225	0.0232 0.0225	3
CYANIDE FREE KG/D (CCNFUR)	ACTUAL GUIDELINE	0.009 0.09	>.005 0.09	>.005 0.09	>.005 0.09	0.009 0.09	>.005 0.09	0.005 0.09	0.009 0.09	>.005 0.09	>.005 0.09	0.005 0.09	>.005 0.09	0.09	
COBALT UNF.TOT. KG/D (COUT)	ACTUAL GUIDELINE	>.005 0.045	0.009 0.045	>.005 0.045	>.005 0.045	>.005 0.045	>.005 0.045	>.005 0.045	0.005 0.045	>.005 0.045	>.005 0.045	>.005 0.045	>.005 0.045		
COPPER UNF.TOT. KG /DAY (CUUT)	ACTUAL GUIDELINE	>.005 0.045	>.005 0.045	0.005 0.045	>.005 0.045	>.005 0.045	>.005 0.045	>.005 0.045	>.005 0.045	>.005 0.045	>.005 0.045	>.005 0.045	>.005 0.045		
IRON UNF.TOT. KG/D (FEUT)	ACTUAL GUIDELINE	0.008 0.045	0.003 0.045	>.005 0.045	>.0005 0.045	>.002 0.045	0.01 0.045	0.003 0.045	0.015 0.045	0.004 0.045	>.005 0.045	- 0.045	>.005 0.045		
NICKEL UNF.TOT. KG/D (NIUT)	ACTUAL GUIDELINE	>.005 0.045	0.009 0.045	0.009 0.045	>.005 0.045	>.005 0.045	>.005 0.045	>.005 0.045	>.005 0.045	>.005 0.045	>.005 0.045	0.005 0.045	>.005 0.045		
RESIDUE TOTAL KG/D (RST)	ACTUAL GUIDELINE	19.44	15.98	14	13.28	8.87	11.43	14.81	9.09	11.52	8.65	22.23	11.7	13.42	

NOTE: PH LIMIT 5.5-10.6. D* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: American Standard, Div of Wabco Standard Inc., Cambridge

INDUSTRIAL SECTOR: Metal, Plastic Fabricating and Finishing

RECEIVING WATERBODY: DIRECT: Speed River to Grand River
INDIRECT: 159 km to Lake Erie

DESCRIPTION OF ACTIVITY: Sinks, tubs, etc. are fabricated and enamelled.

EFFLUENT QUALITY: Contains heavy metals

EFFLUENT TREATMENT: pH adjustment, precipitation, flocculation and sedimentation 5 days a week, 230 days a year

DISCHARGE TYPE: continuous flow 7 am to 12 pm through a drain

COMMENTS:

Generally in compliance. Company reported discharge data for 1986 show two minor exceedances for iron and one for suspended solids in concentrations and loads. MOE survey of fall 1986 found company in compliance, and found flow had been reported too high. Based on estimated flow of 100 m3/day loads are in compliance throughout 1986. Monthly requirements are based on stream assimilation study.

IMIS NUMBER: 0001470004 SIC CODE: 3041,3042 MOE REGION: West Central DISTRICT: Cambridge

02/06/87

000147-00-0(4) AMERICAN STANDARD DIVISION OF WABCO STANDARD

REPORT DATE: 29 JUL 87

CONTROL POINT: 0100 DATA FOR 1986

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	364.6	364.6	364.6	364.6	364.6	364.6	364.6	364.6	364.6	364.6	364.6	364.6	364.60	
M3 /DAY (FTFLOW)	REQUIREMENT	454	454	454	454	454	454	454	454	454	454	454	454	454.00	
IRON UNF.TOT.	ACTUAL	0.11	0.11	0.459	0.09	0.22	0.33	0.46	0.077	0.106	0.195	0.248	0.218	0.22	
KG /DAY (FEUT)	REQUIREMENT	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	2
NICKEL UNF.TOT.	ACTUAL	0.03	0.03	0.102	0.02	0.007	0.04	0.02	0.018	0.018	0.033	0.099	0.062	0.04	
KG /DAY (NIUT)	REQUIREMENT	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	
PH	ACTUAL	8.9	8.4	8.4	8.6	8.5	8.5	8.7	8.5	8.3	8.7	8.8	8.9	8.59998	
(PH)	REQUIREMENT														
RESIDUE PARTIC.	ACTUAL	3.65	4.38	3.65	3.65	3.64	3.65	4.38	3.646	3.646	4.011	3.646	7.84	4.15	
KG /DAY (RSP)	REQUIREMENT	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.60	1
ZINC UNF.TOT.	ACTUAL	0.01	0.01	0.018	0.007	0.004	0	0.02	0.018	0.015	0.0075	0.02	0.015	0.01	
KG /DAY (ZNUT)	REQUIREMENT	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Atlas Steel Company
& PLANT LOCATION: Welland

INDUSTRIAL SECTOR: Iron and Steel

RECEIVING WATERBODY: DIRECT: Welland River to Niagara River
INDIRECT:

DESCRIPTION OF ACTIVITY: Secondary steel industry; recycle scrap metal for melting in electric furnace. Various grades of stainless steel made.Not an integrated mill.No coking operations or blast furnaces.

EFFLUENT QUALITY:

EFFLUENT TREATMENT: Contact and non-contact cooling water treated at two filtration plants. Pickling acids and rinses treated at waste acid solidification plant. Tertiary treatment consists of pH adjustment and heavy metal (chrome, lead) removal and filtration.

DISCHARGE TYPE: continuous

COMMENTS:

Suspended solids/heavy metals out of compliance. Section 17 Order to be served in 1987.

IMIS NUMBER: 0001610005 SIC CODE: 291 MOE REGION: West Central DISTRICT: Welland

10/06/87

000161-00-0(5) ATLAS STEEL COMPANY LIMITED
CONTROL POINT: 0100 DATA FOR 1986

REPORT DATE: 25 JUN 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL			17270	17270	17270	17270	17270	36300	32400	29000	30300	31500	24584.9	
M3 /DAY (FTFLOW)	GUIDELINE														
CADMIUM UNF.TOT.	ACTUAL	0.12	0.0482		0.17	0.034		0.086	0.0726				0.063	0.085	
KG /DAY (CDUT)	GUIDELINE	0	0		0.01727	0.01727		0.01727	0.0363				0.0315	0.017	7
CHROMIUM UNF.TOT.	ACTUAL	3.132	33.73	3.62	34	0.52	93.3	13.5	0.726	0.648	0.87	0.909	1.89	15.6	
KG /DAY (CRUT)	GUIDELINE	0	0	17.27	17.27	17.27	17.27	17.27	36.3	32.4	29	30.3	31.5	20.5	4
IRON UNF.TOT.	ACTUAL								68.97	16.848	34.8	51.51	66.15	47.7	
KG /DAY (FEUT)	GUIDELINE														
PH	ACTUAL	7.7	7.84	6.8	7.3	7.8	7.9	7.9	7.6	7.9	7.6	8.06	7.9	7.69	
(PH)	GUIDELINE														
RESIDUE PARTIC.	ACTUAL	611.99	3468.96	804.8	3454	183.1	1057	1126	2395.8	187.9	81.2	339.36	69.3	1148.3	
KG /DAY (RSP)	GUIDELINE			259.05	259.05	259.05	259.05	259.05	544.5	486	435	454.5	472.5	368.8	5
SOLVENT EXTRACT.	ACTUAL	24.094	31.32	19	53.5	10.4		22.5	54.45	32.4				31.0	
KG /DAY (SOLEXT)	GUIDELINE			259.05	259.05	259.05		259.05	544.5	486				368.8	

NOTE: PH LIMIT 5.5-9.5, 0* INDICATES INTAKE EXCEEDED DISCHARGE, S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Bakelite Thermosets Ltd. Belleville

INDUSTRIAL SECTOR: Organic Chemicals, Synthetic Fibres

RECEIVING WATERBODY: DIRECT: Bay of Quinte
INDIRECT: Lake Ontario

DESCRIPTION OF ACTIVITY: Formaldehyde and hexamethylene tetramine produced on site are used to make phenol and formaldehyde resins.

EFFLUENT QUALITY: Contains soluble and insoluble organics such as phenols.

EFFLUENT TREATMENT: None

DISCHARGE TYPE: Continuous

COMMENTS:

Discharge consists of cooling water and surface runoff. The accuracy of flow measurement and sampling procedure is suspect; exceedances may not be valid. Flow measurement and composite sampling are being investigated. No receiving water impact has been found to date. Accurate flow measurement and sampling are required under MISA program.

IMIS NO.: 0001860006 SIC CODE(S): 373, 3783 MOE REGION: Southeast DISTRICT: Kingston

03/06/87

S U M M A R Y FOR EMIS. TYPE: 04 FINAL DISCHARGE - GROSS DATA DISCHARGED INTO: 02/004/ LAKE ONTARIO
INCLUDES CONTROL POINTS: 0100 0200
DATA FOR 1986 000186-00-0(6) BAKELITE THERMOSETS LTD.

REPORT DATE: 28 JUL 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVERAGE	EXCEEDANCES
FLOW	ACTUAL	7046.43	7046.43	7046.43	8182.95	8182.95	8637.56	8182.95	9319.47	8864.86	8864.86	8864.86	8864.86	8268.71	
M3 /DAY (FTFLOW)	GUIDELINE														
PHENOLS UNF-REAC	ACTUAL	0.1109	0.0975	0.2953	0.0696	0.0374	0.0574	0.1997	0.0284	0.0841	0.1076	0.201	0.6896	0.165	
KG/D (PHNOL)	GUIDELINE	0.140928	0.140928	0.140928	0.163659	0.163659	0.172751	0.163659	0.186389	0.177297	0.177297	0.177297	0.177297	0.165	4

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Beaver Wood Fibre Company, Thorold

INDUSTRIAL SECTOR: Pulp and Paper Mill

RECEIVING WATERBODY: DIRECT: Beaverdams Creek to Twelve Mile Creek
INDIRECT: 13.3 km to Lake Ontario

DESCRIPTION OF ACTIVITY: Paperboard is made from pulp and clean wastepaper.

EFFLUENT QUALITY: contains suspended solids

EFFLUENT TREATMENT: Primary clarifier on total mill effluent removes solids. Spills of broke (pulp in water) and rejects from pulp cleaning are either recycled or sent to landfill. Sludge handling and mill effluent pumping systems were duplicated to minimize clarifier bypassing.

DISCHARGE TYPE: continuous through a submerged outfall

COMMENTS:

BOD and Suspended Solids not in compliance. Target loads set by Pulp and Paper Committee consistent with best practicable technology. Section 126 EPA survey drafted; technical review by company to be completed August/87. Order to be drafted 1987.

The mill effluent normally does not kill fish. Two trout bioassays conducted in 1986, indicated the effluent to have been non-acutely lethal to fish.

IMIS NUMBER: 0001620004 SIC CODE: 271 MOE REGION: West Central DISTRICT: Welland

10/06/87

000162-00-0(4) BEAVER WOOD FIBRE COPANY LTD.

REPORT DATE: 25 JUN 87

CONTROL POINT: 0100 DATA FOR 1986

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	14000	13600	14400	14000	13800	12950	12950	13320	12950	13460	12650	13300	13448.3	
M3 /DAY (FTFLOW)	GUIDELINE														
BOD 5 DAY	ACTUAL	1960	2010	2580	2660	3065	3069	3173	2899	3755	2090	1375	2141	2564.75	
KG /DAY (BOD5)	REQUIREMENT	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	7

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

REPORT DATE: 25 JUN 87

CONTROL POINT: 0200 DATA FOR 1986

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
RESIDUE FILTERED	ACTUAL	1680	1770	1730	3080	3036	3108	2849	2664	2914	2948	2656	2660	2591.25	
KG /DAY (RSF)	GUIDELINE														
RESIDUE PARTIC.	ACTUAL	900	905	860	1260	2070	1916	1295	1332	1230	1809	1197	2195	1414.08	
KG /DAY (RSP)	GUIDELINE	904	904	904	904	904	904	904	904	904	904	904	904	904	10

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: B. F. Goodrich Niagara Falls

INDUSTRIAL SECTOR: Organic Chemicals, Synthetic Fibres

RECEIVING WATERBODY: DIRECT: Welland River to Niagara River
INDIRECT:

DESCRIPTION OF ACTIVITY: Polyvinyl chloride resins are made from purchased vinyl chloride monomer.

EFFLUENT QUALITY:

EFFLUENT TREATMENT: Conventional secondary sewage treatment plant followed by aerated lagoon followed by facultative lagoon. Wastewater from one plant is treated by an aeration pond and polishing lagoon. From another plant, wastewaters are equalized, neutralized and treated by an activated sludge process before discharge to the aeration pond.

DISCHARGE TYPE: continuous through an open outfall

COMMENTS:

Effluent quality not in compliance for BOD5 and Suspended Solids. Activated sludge process inoperative due to shock loadings. Experimentation to modify A/S system completed in 1986; Section 24 OWRA submitted, company is in compliance in 1987.

IMIS NUMBER: 0000370304 SIC CODE: 373 MOE REGION: West Central DISTRICT: Welland

10/06/87

000037-03-0(4) B.F.GOODRICH
CONTROL POINT: 0100 DATA FOR 1986

REPORT DATE: 25 JUN 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	2620	2197	2973	2149	1493	1779	2481	1978	2130	2499	1902	2362	2213.58	
M3 /DAY (FTFLOW)	GUIDELINE														
BOD 5 DAY	ACTUAL	18.3	63.5	58.79		29.74	52.09	49.74		45.91	48.2	40.76	26.71	43.37	
KG /DAY (BOD5)	GUIDELINE	39.3	32.955	44.595		22.395	26.685	37.215		31.95	37.485	28.53	35.43	33.20	8
NH4-N FIL.REAC	ACTUAL	0.472	4.13	1.53	3.14	0.07	3.79	27.73	3.17	3.33	7.3	0	4.75	4.95	
KG /DAY (NNH4FR)	GUIDELINE	26.2	21.97	29.73	21.49	14.93	17.79	24.81	19.78	21.3	24.99	19.02	23.62	22.14	1
PH	ACTUAL	6.4	6.7	5.8	6.3	6.2	6.4	7.3	7	7	6.9	6.8	6.5	6.61	
(PH)	GUIDELINE														
PHOSPHOR UNF.TOT.	ACTUAL	0.05	0.17	0.26	0.5	0.13	0.23	6.21	0.12	0.95	1.79	0.26	0.06	0.89	
KG /DAY (PPUT)	GUIDELINE	2.62	2.197	2.973	2.149	1.493	1.779	2.481	1.978	2.13	2.499	1.902	2.362	2.21	1
RESIDUE PARTIC.	ACTUAL	65.01	39.79	8.79	46.3	0	14.52	106.73	0	1.97	0	9.5	4.46	24.76	
KG /DAY (RSP)	GUIDELINE	39.3	32.955	44.595	32.235	22.395	26.685	37.215	29.67	31.95	37.485	28.53	35.43	33.20	4
RESIDUE TOTAL	ACTUAL	752.75	511.07	624.78	575.32	366.35	657.94	753.36	440.45	672.71	538.32	646.11	655.89	599.59	
KG /DAY (RST)	GUIDELINE														
VINYL CHLORIDE	ACTUAL	0.3	0.33	0	0.14	0.08	0.02	0	0.07	0.05	0	0	0.09	0.09	
KG /DAY (X1VCL)	GUIDELINE	2.62	2.197	2.973	2.149	1.493	1.779	2.481	1.978	2.13	2.499	1.902	2.362	2.21	

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Blackstone Industrial Prods. Ltd. Stratford

INDUSTRIAL SECTOR: Metal, Plastic Fabricating and Finishing

RECEIVING WATERBODY: DIRECT: Avon River
INDIRECT:

DESCRIPTION OF ACTIVITY: Manufacture of automotive radiators and heater cores.

EFFLUENT QUALITY: Contains dissolved metals including copper, zinc and nickel.

EFFLUENT TREATMENT:

DISCHARGE TYPE: Batch

COMMENTS:

Effluent considered at present.

IMIS NO.: 0001850007 SIC CODE: 325 MOE REGION: Southwest DISTRICT: London

28/07/87

000185-00-0(7) BLACKSTONE INDUSTRIAL PRODUCTS LTD

REPORT DATE: 28 JUL 87

CONTROL POINT: 0100 DATA FOR 1986

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	818	887	840	760	689	767	641	750	878	818	817	746	784	
M3 /DAY (FTFLOW)	GUIDELINE														
CHROMIUM UNF.TOT.	ACTUAL	0.07	0.08	0.05	0.05	0.04	0.04	0.15	0.16	0.07	0.09	0.12	0.18	0.08	
KG /DAY (CRUT)	GUIDELINE	0.818	0.887	0.84	0.76	0.689	0.767	0.641	0.75	0.878	0.818	0.817	0.746	0.784	
COPPER UNF.TOT.	ACTUAL	0.155	0.231	0.32	0.129	0.15	0.12	0.36	0.38	0.25	0.19	0.18	0.23	0.23	
KG /DAY (CUUT)	GUIDELINE	0.818	0.887	0.84	0.76	0.689	0.767	0.641	0.75	0.878	0.818	0.817	0.746	0.784	
LEAD UNF.TOT.	ACTUAL	0.08	0.08	0.14	0.16	0.08	0.09	0.06	0.11	0.14	0.14	0.11	0.2	0.11	
KG /DAY (PBUT)	REQUIREMENT	0.818	0.887	0.84	0.76	0.689	0.767	0.641	0.75	0.878	0.818	0.817	0.746	0.784	
PH	ACTUAL	8.1	7.9	8.1	7.9	7.8	7.9	8	7.9	8.1	7.9	7.9	8.1	7.95	
(PH)	REQUIREMENT														
RESIDUE PARTIC.	ACTUAL	1.146	1.614	1.66	1.064	1.027	1.81	1.46	2.42	1.9	1.52	1.39	0.85	1.67	
KG /DAY (RSP)	GUIDELINE	12.27	13.305	12.6	11.4	10.335	11.505	9.615	11.25	13.17	12.27	12.255	11.19	11.76	
ZINC UNF.TOT.	ACTUAL	0.188	0.195	0.31	0.099	0.138	0.15	0.04	0.45	0.33	0.36	0.025	0.208	0.29	
KG /DAY (ZNUT)	GUIDELINE	0.818	0.887	0.84	0.76	0.689	0.767	0.641	0.75	0.878	0.818	0.817	0.746	0.784	

NOTE: PH LIMIT 6.5-8.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Boise Cascade Canada Ltd. INDUSTRIAL SECTOR: Pulp and Paper Mill
& PLANT LOCATION: Fort Frances

RECEIVING WATERBODY: DIRECT: Rainy R.
INDIRECT:

DESCRIPTION OF ACTIVITY: Mainly softwood (black spruce, jack pine and balsam fir) logs and chips are converted into bleached kraft pulp and groundwood paper specialties. Crude tall oil is also produced.

EFFLUENT QUALITY: Contains suspended solids (bark, wood, paper) and trace amounts of organics including chlorinated compounds

EFFLUENT TREATMENT: The kraft woodroom (debarking) is dry; groundwood effluent is treated by screen and clarifier to remove solids. Solids from the groundwood paper machine are removed by a disc filter, a saveall screen and a clarifier. After the total mill effluent is treated biologically (aerated lagoon), the solids are removed by a quiescent basin.

DISCHARGE TYPE: Continuous through a diffuser.

COMMENTS:

Suspended solids requirement does not include assumed biological solids. Control order expired June 1984. BOD_5 (15,000 kg/day) and Suspended Solids (7,500 kg/day) limits are 30 day running averages. The mill met the limits for suspended solids and BOD.

The final effluent is toxic to fish. Nine trout bioassays conducted in 1986 indicated that, statistically, the percentage effluent required to kill 50% of the fish by four days exposure ranged from 10.0% to 42.8%.

IMIS NO.: 0000870105 SIC CODE: 271 MOE REGION: Northwest DISTRICT: Kenora

26/08/87

D000087-01-0(5) BOISE CASCADE CANADA LTD. FORT FRANCES
CONTROL POINT: 0100 DATA FOR 1986

REPORT DATE: 05 AUG 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	65900	72000	58500	67800	70400	73700	76000	76000	64700	71200	70800	66500	69458.3	
M3 /DAY (FTFLOW)	REQUIREMENT														
BOD 5 DAY	ACTUAL	12000	13000	14400	13200	10800	8100	9000	9200	7700	9800	9500	9200	10491.6	
KG /DAY (BOD5)	REQUIREMENT	15000	15000	15000	15000	13000	13000	13000	13000	13000	13000	15000	15000	14000	
RESIDUE PARTIC.	ACTUAL	5000	4200	5100	4100	4700	4500	4400	4900	4100	4700	4900	3600	4516.66	
KG /DAY (RSP)	REQUIREMENT	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	7500	

NOTE: PH LIMIT 5.5-9.5, 0* INDICATES INTAKE EXCEEDED DISCHARGE, S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Boise Cascade Canada Ltd. Kenora

INDUSTRIAL SECTOR: Pulp and Paper Mill

RECEIVING WATERBODY: DIRECT: Winnipeg R.
INDIRECT:

DESCRIPTION OF ACTIVITY: Softwood (jack pine, black spruce) logs are made into newsprint through sulphite and stone groundwood pulping.

EFFLUENT QUALITY: Contains suspended solids (bark, paper, wood) and a variety of organic compounds.

EFFLUENT TREATMENT: A large clarifier removes solids from the paper machine room and sulphite high-solids wastewaters. Two large screens remove solids from low-solids wastewaters at the paper machines, sulphite blow pit washings and stone groundwood bearing water.

DISCHARGE TYPE: Continuous through a diffuser.

COMMENTS:

Suspended Solids (three) exceedances due to new equipment commissioning difficulties. Requirements have been met since then. Control order expires Dec. 31, 1988. BOD_5 (44,000 kg/day) and Suspended Solids (6,000 kg/day) limits are 30 day running averages.

The mill's discharge is highly toxic to fish. Three trout bioassays conducted in 1986, indicated that it would take, statistically, 5.7%, 7.8% and 11.0% effluent to kill 50% of the test fish by the end of four days exposure.

IMIS NO.: 0000870006 SIC CODE: 271 MOE REGION: Northwest DISTRICT: Kenora

26/08/87

000087-00-0(6) BOISE CASCADE CANADA LTD. KENORA

REPORT DATE: 05 AUG 87

CONTROL POINT: 0100 DATA FOR 1986

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	50000	51168	47029	46959	50118	53958	56129	55420	54010	49300	45800	43100	50249.3	
M3 /DAY (FTFLOW)	REQUIREMENT														
BOD 5 DAY	ACTUAL	15290	18610	19400	19600	23400	23800	22900	21000	20200	25000	22600	20300	21008.3	
KG /DAY (BOD5)	REQUIREMENT	44000	44000	44000	44000	44000	44000	44000	44000	44000	44000	44000	44000	44000	
RESIDUE PARTIC.	ACTUAL	6710	6310	6090	4720	4400	4910	4890	5380	5310	4300	3770	3380	5014.16	
KG /DAY (RSP)	REQUIREMENT	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	3

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Borg-Warner Chemicals Cobourg

INDUSTRIAL SECTOR: Organic Chemicals and Synthetic Fibres

RECEIVING WATERBODY: DIRECT: Lake Ontario
INDIRECT:

DESCRIPTION OF ACTIVITY: Formulation of ABS resins (plastics).

EFFLUENT QUALITY:

EFFLUENT TREATMENT: Primary and secondary - extended aeration.

DISCHARGE TYPE: continuous through a submerged diffuser

COMMENTS:

This waste water treatment plant was under construction to upgrade primary section for all of 1985 and into 1986. This caused operating problems resulting in exceedances of Suspended Solids and Total Phosphorus. The construction was completed in early 1986. Certificate of Approval 4-003-85-006 issued for plant, July 23, 1985. The revised effluent criteria are to be in force upon completion of construction (early '86). The following table uses actual flow times the actual concentration for the " ACTUAL " figure, and the actual flow times the Certificate of Approval value or set concentrations for the " GUIDELINE ".

IMIS NO.: 0000600007 SIC CODE: 377 MOE REGION: Central DISTRICT: Peterborough

24/07/87

000060-00-0(7) BORG-WARNER CHEMICALS
CONTROL POINT: 0100 DATA FOR 1986

REPORT DATE: 24 JUL 87

FLOW LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	1522.94	1763.88	1709.33	1877.53	1745.69	1986.64	2118.47	2404.88	2018.46	1836.62	2327.59	2109.38	1951.78	
M3 /DAY (FTFLOW)	GUIDELINE														
BOD 5 DAY	ACTUAL	24.37	26.11	56.41	24.03	29.68	18.48	40.25	10.82	20.18	33.98	46.55	63.28	33.33	
KG/D AS O (BODS)	GUIDELINE	45.69	52.92	51.28	56.33	52.37	59.60	63.55	72.15	60.55	55.10	69.83	63.28	58.55	1
CHEM. OX DEMAND	ACTUAL	60.92	128.76	193.15	101.39	106.49	105.29	197.02	57.72	143.31	73.46	221.12	489.38	154.35	
KG/D AS O (COD)	GUIDELINE	213.21	246.94	239.31	262.85	244.40	278.13	296.59	336.68	282.58	257.13	325.86	295.31	273.25	1
K'DAHL N TOTAL	ACTUAL		27.87	32.45	12.75	12.22	11.88	16.52	6.57	9.28	8.26	13.73	15.82	15.54	
KG/D AS N (NNTKUR)	GUIDELINE		88.19	85.47	93.88	87.28	99.33	105.92	120.24	100.92	91.83	116.38	105.47	97.59	
PH	ACTUAL	7.20	7.30	7.30	7.40	7.20	7.30	7.10	7.20	7.40	7.50	7.60	6.90	7.28	
(PH)	GUIDELINE														
PHOSPHOR UNF.TOT.	ACTUAL	2.74	0.95	4.44	2.82	5.24	4.37	7.20	4.33	3.03	1.80	2.51	4.01	3.63	
KG/D AS P (PPUT)	GUIDELINE	1.52	1.76	1.71	1.88	1.75	1.99	2.12	2.40	2.02	1.84	2.33	2.11	1.95	10
RESIDUE PARTIC.	ACTUAL	31.98	42.33	199.99	82.61	45.39	45.69	226.68	33.67	187.72	139.58	283.97	415.55	140.53	
KG/D (RSP)	GUIDELINE	45.69	52.92	51.28	56.33	52.37	59.60	63.55	72.15	60.55	55.10	69.83	63.28	58.55	7

NOTE: PH LIMIT 5.5-9.5. D* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Campbell Red Lake Mines Ltd.
& PLANT LOCATION: Balmerton
Township Golden

INDUSTRIAL SECTOR: Metal Mining, , Smelting, Refining

RECEIVING WATERBODY: DIRECT: Balmer Creek - Chukuni River
INDIRECT: English River

DESCRIPTION OF ACTIVITY: Gold mining and milling

EFFLUENT QUALITY: May contain heavy metals, cyanide, arsenic

EFFLUENT TREATMENT: Lime precipitation of heavy metals and arsenic, primary tailings disposal area; secondary and tertiary polishing for cyanide removal; total retention of wastewaters during critical late-winter, early summer period for complete cyanide degradation.

DISCHARGE TYPE: Continuous through July - March, each year; no effluent April - June depending on cyanide concentrations.

COMMENTS:

The effluent discharge point is shared with Dickenson-Sullivan Joint Venture, Arthur W. White Mine, thus the loadings and comments for the two are identical. In 1986, an intensive study was started as to why an exceedance occurred during the spring flush. To prevent fish kill, a fish barrier was erected prior to the discharge point on Balmer Creek. Also, the effluent is closely monitored during the spring runoff and is not released until the cyanide and total metal are at acceptable levels.

The final effluent was sampled seven times during 1986 and tested by 96-hour rainbow trout bioassays (LC50 range of 55 - >100%). Six of the LC50's were >100% while the seventh was 55%.

IMIS NO.: 0043440007 SIC CODE: MOE REGION: Northwest DISTRICT: Kenora

05/06/87

004344-00-0(7) CAMPBELL RED LAKE MINES LTD
CONTROL POINT: 0100 DATA FOR 1986

REPORT DATE: 05 AUG 87

CONCENTRATION PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
ARSENIC UNF.TOT.	ACTUAL	0.35	0.30	0.45	0.34	0.42	0.39	0.44	0.61	0.54	0.38	0.33	0.39	0.41	
MG/L (ASUT)	REQUIREMENT	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	2
CYANIDE TOTAL	ACTUAL	0.57	0.19	20.1	0.81	1.98	0.44	0.08	0.09	0.13	0.2	0.29	0.22	2.092	
MG/L (CCNAUR)	REQUIREMENT	2	2	2	2	2	2	2	2	2	2	2	2	2	1
CUMULATIVE METALS	ACTUAL	0.86	0.73	0.68	0.9	1.91	1.34	0.8	1.53	0.63	0.8	0.83	0.87	0.98	
MG/L	REQUIREMENT	1	1	1	1	1	1	1	1	1	1	1	1	1	3

NOTE: PH LIMIT 5.5-9.5. 0 INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Campbell Soup Co. Ltd. INDUSTRIAL SECTOR: Food and beverage
& PLANT LOCATION: P.O. Box St. Marys

RECEIVING WATERBODY: DIRECT: 248 km from Thames R. North Branch
INDIRECT:

DESCRIPTION OF ACTIVITY: Poultry and small game dressing

EFFLUENT QUALITY:

EFFLUENT TREATMENT: Diffused outfall to river sludge irrigation on company land

DISCHARGE TYPE: Continuous

COMMENTS:

Upgrading of facilities planned for fall 1987. Improved sewage treatment system expected to be operational by late 1987.

IMIS NO.:0000970004 SIC CODE: 101 MOE REGION: Southwest DISTRICT: London

28/07/87

000097-00-0(4) CAMPBELL SOUP COMPANY LTD

CONTROL POINT: 0100 DATA FOR 1986

REPORT DATE: 28 JUL 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	2704	2609	2477	2768	2359	2427	2618	3145	2695	2668	3186	3041	2724	
M3 /DAY (FTFLOW)	REQUIREMENT														
BOD 5 DAY	ACTUAL	41	18	30	60.9	19.6	22	10	16	27	14	15	119	32.7	
KG /DAY (BOD5)	GUIDELINE	50	50	50	50	50	50	50	50	50	50	50	50	50	2
PH	ACTUAL	7.8	7.4	7.8	8.3	7.83	7.25	7.45	7.2	7.6	8	7.7	7.6	7.66	
(PH)	REQUIREMENT														
PO4 FIL.REAC	ACTUAL	0.56	0.31	0.28	0.9	1.9	2	2.4	1.5	0.37	0.9	1.2	2.1	1.2	
KG /DAY (PPO4FR)	GUIDELINE														
RESIDUE PARTIC.	ACTUAL	54	92	45	88	44.6	34	29.3	29	34	59	97	999	133.7	
KG /DAY (RSP)	GUIDELINE	50	50	50	50	50	50	50	50	50	50	50	50	50	6
RESIDUE TOTAL	ACTUAL	1330	1122	1206	1444	1246	1126	1299	1779	1473	1395	1476	1713	1384	
KG /DAY (RST)	GUIDELINE														

NOTE: PH LIMIT 6.5-8.5, 0* INDICATES INTAKE EXCEEDED DISCHARGE, S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Canadian Canners Ltd. St. Davids

INDUSTRIAL SECTOR: Food and Beverage

RECEIVING WATERBODY: DIRECT: Four Mile Creek
INDIRECT: 12 km to Lake Ontario

DESCRIPTION OF ACTIVITY:

EFFLUENT QUALITY:

EFFLUENT TREATMENT: Facultative lagoon.

DISCHARGE TYPE: batch discharge usually in fall of year

COMMENTS:

Company is in compliance. Lagoon is discharged spring and fall.

IMIS NUMBER: 0001930007 SIC CODE: 102 MOE REGION: West Central DISTRICT: Welland

10/06/87

000193-00-0(7) CANADIAN CANNERS LIMITED
CONTROL POINT: 0100 DATA FOR 1986

REPORT DATE: 25 JUN 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL					0	0	1300	0	1300	0	0	0	325	
M3 /DAY (FTFLOW)	GUIDELINE														
BOD 5 DAY	ACTUAL							9.1		9.1				9.1	
KG /DAY (BOD5)	GUIDELINE							19.5		19.5				19.5	
PHOSPHOR UNF.TOT.	ACTUAL							0.078		0.078				0.078	
KG /DAY (PPUT)	GUIDELINE							1.3		1.3				1.3	
RESIDUE PARTIC.	ACTUAL							33.8		33.8				33.8	
KG /DAY (RSP)	GUIDELINE							19.5		19.5				19.5	2

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Canadian Industries Ltd. Cornwall

INDUSTRIAL SECTOR: Inorganic Chemicals

RECEIVING WATERBODY: DIRECT: St. Lawrence River
INDIRECT:

DESCRIPTION OF ACTIVITY: The mercury cell process is used to produce caustic and chlorine gas from salt

EFFLUENT QUALITY: Contains low levels of suspended and dissolved solids.

EFFLUENT TREATMENT: All mercury-contaminated streams are collected and subjected to an efficient physical and chemical treatment to remove mercury before discharge.

DISCHARGE TYPE: Continuous through a submerged diffuser shared with Domtar.

COMMENTS:

In compliance. Easily meets Federal Fisheries Act regulations governing the amount of mercury discharged from chlor-alkali plants.

IMIS NUMBER: 0000390401 SIC CODE: 3782 MOE REGION: Southeast DISTRICT: Cornwall

03/06/87

000039-04-0(1) CANADIAN INDUSTRIES LTD
CONTROL POINT: 0100 DATA FOR 1986

REPORT DATE: 20 JUN 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	2381	2712	3078	2883	2937	2981	2938	3188	2925	2781	2834	2828	2872.16	
M3 /DAY (FTFLOW)	GUIDELINE														
MERCURY UNF.TOT.	ACTUAL	0.0421	0.0536	0.0495	0.0334	0.0491	0.046	0.0635	0.031	0.0466	0.0261	0.0421	0.0314	0.042867	
KG /DAY (MGUT)	GUIDELINE	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	

NOTE: PH LIMIT 5.5-9.5, 0* INDICATES INTAKE EXCEEDED DISCHARGE, S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Canadian Industries Ltd.
& PLANT LOCATION: Lambton Works
Courtright

INDUSTRIAL SECTOR: Inorganic Chemicals

RECEIVING WATERBODY: DIRECT: St. Clair River
INDIRECT:

DESCRIPTION OF ACTIVITY: Sulphuric acid, phosphate ore and nitrogen are converted into several grades of fertilizer.

EFFLUENT QUALITY: Contains dissolved inorganic compounds such as phosphorus and ammonia

EFFLUENT TREATMENT:

DISCHARGE TYPE: continuous at shore

COMMENTS:

In compliance.

IMIS NUMBER: 0000390203 SIC CODE: 372 MOE REGION: Southwest DISTRICT: Sarnia

26/08/87

000039-02-0(3) CANADIAN INDUSTRIES LTD INC AGRICULTURALCHEM

REPORT DATE: 23 JUL 87

CONTROL POINT: 0200 DATA FOR 1986

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	286404	286404	286404	286404	286404	284822	183898	195041	398549	354595	276707	172751	270699	
M3 /DAY (FTFLOW)	GUIDELINE														
FLUORIDE UNF.TOT.	ACTUAL	43	37.23	45.8	31.5	28.64	37.03	22.1	19.5	35.9	35.5	27.6	25.91	32.50	
KG /DAY (FFIDUT)	REQUIREMENT	115	115	115	115	115	114	74	78	139	142	107	69	108.00	
NH3-N TOTAL	ACTUAL	658.72	747.5	833.42	286.4	300.72	196.52	119.53			386.5		343.73	430.34	
KG /DAY (NNHTFR)	REQUIREMENT	1432	1432	1432	1432	1432	1424	919	975	1743	1773	1384	864	1354	
NO2+NO3N FIL.REAC	ACTUAL	234.85	280.67	272.1	229.12	286.4	233.55	257.45	142.4	355.5	383	234.5	395.55	275.40	
KG /DAY (NNOTFR)	GUIDELINE														
PH	ACTUAL	7.3	7.2	7.2	7.4	7.6	7.7	7.7	7.5	7.6	7.6	7.6	7.3	7.44	
(PH)	GUIDELINE														
PHOSPHOR UNF.TOT.	ACTUAL	15.82	15	21.5	22.9	12.6	17.1	9.6	8.2	17.1	19.5	11.04	8.81	14.40	
KG /DAY (PPUT)	REQUIREMENT	28.6	28.6	28.6	28.6	28.6	28.5	18.4	19.5	34.9	35.5	27.7	17.3	27.10	
DINITROTOLUENE	ACTUAL	12.6	8.6	8.1	6.6	5.7	12.8	3.7	4.5	21.6	15.2	9.4	2.4	9.3	
KG/DAY	REQUIREMENT	43	43	43	43	43	42.7	27.6	29.3	52.3	53.2	41.5	25.9	41	

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Canadian Oxy-Durez
& PLANT LOCATION: Dunlop
Fort Erie

INDUSTRIAL SECTOR: Organic Chemicals, Synthetic Fibres

RECEIVING WATERBODY: DIRECT: Frenchmans Creek to Niagara River
INDIRECT:

DESCRIPTION OF ACTIVITY: Manufactures phenol-formaldehyde type resins.

EFFLUENT QUALITY: Recycles waste water; cooling water discharge only.

EFFLUENT TREATMENT:

DISCHARGE TYPE: continuous through an open outfall

COMMENTS:

Company not in compliance for phenols. Indirect contamination being assessed and storm water separation program being conducted. Company may redirect process wastewaters to sanitary sewers.

IMIS NUMBER: 0001590009 SIC CODE: 3783 MOE REGION: West Central DISTRICT: Welland

10/06/87

000159-00-0(9) CANADIAN OXY-DUREZ
CONTROL POINT: 0100 DATA FOR 1986

REPORT DATE: 25 JUN 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	208.2	148	251	219	211	240	295.8	241	183	100	209	329.6	219.63	
M3 /DAY (FTFLOW)	GUIDELINE														
BOD 5 DAY	ACTUAL					0.7	1.51	0.68	2.9	0.69	0.22	0.606	0.857	1.02	
KG /DAY (BOD5)	GUIDELINE					3.165	3.6	4.437	3.615	2.745	1.5	3.135	4.944	3.29	
PHENOLS UNF-REAC	ACTUAL	0.0059	0.024	0.0031	0.0031	0.0026	0.0025	0.004	0.015	0.0077	0.005	0.05	0.0057	0.0107	
KG /DAY (PHNOL)	GUIDELINE	0.004164	0.00296	0.00502	0.00438	0.00422	0.0048	0.005916	0.00482	0.00366	0.002	0.00418	0.006592	0.0044	6
PHOSPHOR UNF.TOT.	ACTUAL				0.052	0.06	0.06	0	0.024	0	0	0	0	0.022	
KG /DAY (PPUT)	GUIDELINE														
RESIDUE PARTIC.	ACTUAL											0		0.00	
KG /DAY (RSP)	GUIDELINE											3.135		3.14	

NOTE: PH LIMIT 5.5-9.5, 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: & PLANT LOCATION: CASCO Company (previously reported as - The Canada Starch Co. Ltd.) 800 James Street Cardinal

INDUSTRIAL SECTOR: Food and Beverage

RECEIVING WATERBODY: DIRECT: St. Lawrence River
INDIRECT:

DESCRIPTION OF ACTIVITY: Wet milling & oil refining processes

EFFLUENT QUALITY: Contains soluble organics, insoluble organics and phosphorus.

EFFLUENT TREATMENT: Aerated cell.

DISCHARGE TYPE: Continuous

COMMENTS:

COD and Suspended Solids not in compliance. Requirement and Direction served on February 24, 1987 with requirements of 25 mg/L for BOD5 and Suspended Solids, and 1 mg/L for phosphorus commencing January 01,1988 and January 01, 1989.

IMIS NUMBER: 0001720002 SIC CODES: 106, 1083, 1089 MOE REGION: Southeast DISTRICT: Kingston

03/06/87

SUMMARY FOR EMIS. TYPE: 04 FINAL DISCHARGE - GROSS DATA DISCHARGED INTO: 02/005/ ST. LAWRENCE R.
INCLUDES CONTROL POINTS: 0100 0200 0301 0302
DATA FOR 1986 000172-00-0(2) CASCO COMPANY

REPORT DATE: 20 JUNE 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	26200	25700	24200	20200	21800	23200	21900	21500	19900	16800	17500	18000	21575	
M3 /DAY (FTFLOW)	GUIDELINE														
CHEM. OX DEMAND	ACTUAL	8953	8200	13850	6503	7556	7361	7061	4415	3839	3960	4705	3920	6693.58	
KG /DAY (CODF)	GUIDELINE	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	
PHOSPHOR UNF.TOT.	ACTUAL			62.1	32.8	52.9	32.5	22	15.4	33.7	38.5	45.6	34.3	36.98	
KG /DAY (PPUT)	GUIDELINE			SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	
RESIDUE PARTIC.	ACTUAL	2159	2276	2433	1710	1803	2287	2479	1628	2084	2450	2482	2195	2165.5	
KG /DAY (RSP)	GUIDELINE	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Celanese Canada Ltd. Ernestown Twp.

INDUSTRIAL SECTOR: Organic Chemicals, Synthetic Fibres

RECEIVING WATERBODY: DIRECT: Lake Ontario
INDIRECT:

DESCRIPTION OF ACTIVITY: Textiles are made from polyester fibre produced by the reaction of ethylene glycol and terephthalic acid

EFFLUENT QUALITY:

EFFLUENT TREATMENT: Secondary activated sludge.

DISCHARGE TYPE: Continuous

COMMENTS:

Effluent objectives for wastewater treatment plant set out in Certificate of Approval #4-006-86-006 dated June 16th, 1986 for BOD at 30 mg/L (loading 136 kg/day) and COD at 60 mg/L (272 kg/day). Estimated flows reported prior to October 1986 suspect; the ecxeedances are not considered valid. Actual metered flows reported for November and December 1986 suggest previous estimates were approximately double the true flows.

IMIS NUMBER: 0001730001 SIC CODE: 183 MOE REGION: Southeast DISTRICT: Kingston

28/07/87

000173-00-0(1) CELANESE CANADA (MILLHAVEN) INC
CONTROL POINT: 0100 DATA FOR 1986
REPORT DATE: 18 AUG 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	8634	9346	9058	11817	17319	11345		14810	24534	26278	13690	8884	14155.9	
M3 /DAY (FTFLOW)	GUIDELINE														
BOD 5 DAY	ACTUAL	502	774	488	318	398	215		325	196	96	123	121	323	
KG /DAY (BOD5)	GUIDELINE	136	136	136	136	136	136		136	136	136	136	136	136	8
CHEM. OX DEMAND	ACTUAL	883	1362	850	553	692	385		650	391	192	247	243	586	
KG /DAY (COD)	GUIDELINE	272	272	272	272	272	272		272	272	272	272	272	272	8
RESIDUE PARTIC.	ACTUAL	485	737	253	177	121	91		148	122	36	108	35	210	
KG /DAY (RSP)	GUIDELINE	215.65	233.65	226.45	295.425	432.975	283.625		370.25	613.35	656.95	342.25	222.1	354	3

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Champlain Industries Ltd. Tara

INDUSTRIAL SECTOR: Food and Beverage

RECEIVING WATERBODY: DIRECT: Sauble R.
INDIRECT:

DESCRIPTION OF ACTIVITY: Whey is made into whey based products.

EFFLUENT QUALITY: Contains organic compounds such as proteins.

EFFLUENT TREATMENT: Secondary. Oxidation ditch clarifier sludge irrigated onto company land

DISCHARGE TYPE: Continuous

COMMENTS:

In compliance.

IMIS NO.: 0001000108 SIC CODE: 104 MOE REGION: Southwest DISTRICT: Owen Sound

17/07/87

000100-01-0(8) CHAMPLAIN INDUSTRIES LIMITED
CONTROL POINT: 0100 DATA FOR 1986

REPORT DATE: 21 JUL 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	12.1	12.1	12.1	52	55	55	43	46	44	60	48	48	40.6	
M3 /DAY (FTFLOW)	REQUIREMENT														
BOD 5 DAY	ACTUAL	0.22	0.19	0.33	0.73	0.73	0.69	-	-	0.04	-	0.19	0.19	0.367	
KG /DAY (BOD5)	REQUIREMENT	2.7	2.7	2.7	2.7	2.7	2.7			2.7		2.7	2.7	2.7	
NH3-N TOTAL	ACTUAL	0.02	0.02	0.062	0.104	0.06	0.05	-	-	0.03	-	0.05	0.05	0.176	
KG /DAY (NNHTFR)	GUIDELINE	0.121	0.121	0.121	0.52	0.55	0.55	0.43	0.46	0.44	0.6	0.48	0.48	0.41	
PH	ACTUAL	7.95	7.94	8.04	7.89	7.95	7.76							7.9	
(PH)	GUIDELINE														
PO4 FIL.REAC	ACTUAL	0.39	0.27	0.41	0.37	0.31	0.33	-	-	0.19	-	0.06	0.13	0.273	
KG /DAY (PPO4FR)	GUIDELINE														
RESIDUE PARTIC.	ACTUAL	0.46	0.24	1.45	0.93	0.63	0.6	-	-	0.42	-	0.9	1.65	0.8	
KG /DAY (RSP)	REQUIREMENT	2.7	2.7	2.7	2.7	2.7	2.7			2.7		2.7	2.7	2.7	

NOTE: PH LIMIT 5.5-9.5, 0* INDICATES INTAKE EXCEEDED DISCHARGE, S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Chesapeake and Ohio Railway Co. Northern Reg. St. Thomas

INDUSTRIAL SECTOR: Wholesale and retail trade

RECEIVING WATERBODY: DIRECT: Kettle Cr.
INDIRECT:

DESCRIPTION OF ACTIVITY:

EFFLUENT QUALITY:

EFFLUENT TREATMENT: Two oil separation lagoons

DISCHARGE TYPE: Batch

COMMENTS:

No discharge during sampling attempts March 11, 20 and 27 and April 16 and 22 1986. No discharge in May.

IMIS NO.: 0001010008 SIC CODE: 503 MOE REGION: Southwest DISTRICT: London

28/07/87

000101-00-0(8) CHESAPEAKE AND OHIO RAILWAY CO NORTHERN REGI

REPORT DATE: 28 JUL 87

CONTROL POINT: 0100 DATA FOR 1986

CONCENTRATION PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
PH	ACTUAL	6.9	7.2				7.4	7.6	7.8	7.25	7.2	7.1	7	7.27221	
(PH)	GUIDELINE														
SOLVENT EXTRACT.	ACTUAL	1.2	3.1				1.8	1.6	2.3	1.5	1.3	1.4	0.9	1.67777	
MG/L (SOLEXT)	GUIDELINE	15	15				15	15	15	15	15	15	15	15	

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Corby Distilleries Ltd. INDUSTRIAL SECTOR: Food and Beverage
& PLANT LOCATION: Corbyville

RECEIVING WATERBODY: DIRECT: Moira R.
INDIRECT: Bay of Quinte, Lake Ontario

DESCRIPTION OF ACTIVITY: Distillery, producing industrial and beverage alcohols.

EFFLUENT QUALITY: Chemical oxygen demand of 120 mg/L and suspended solids of 60 mg/L.

EFFLUENT TREATMENT: Extended aeration activated sludge plant discharging to polishing lagoon and then to Moira River.

DISCHARGE TYPE: Continuous (when operating)

COMMENTS:

Treatment plant operated on an intermittent basis only, during periods of production. During a treatment plant upset in May 1986 effluent concentration guidelines were exceeded for several days. The effluent guidelines are under review. Moira R. impact minimal due to high streamflow.

IMIS NO.: 0001870005 SIC CODE: 109 MOE REGION: Southeast DISTRICT: Kingston

03/06/87

000187-00-0(5) CORBY DISTILLERIES LIMITED

CONTROL POINT: 0100 DATA FOR 1986

REPORT DATE: 28 JUL 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	750.104	750.104	750.104	750.104	750.104		113.652		227.304	1022.87	909.217	909.217	693.277	
M3 /DAY (FTFLOW)	GUIDELINE														
CHEM. OX DEMAND	ACTUAL	36.00	21.75	39.01	40.51	1072.65		14.21		13.18	104.12	58.19	23.64	143.23	
KG/D (COD)	GUIDELINE	90.01	90.01	90.01	90.01	90.01		13.64		27.28	122.74	109.11	109.11	83.19	3
PH FIELD	ACTUAL	6.8	7	7.1	7.2	7.3		7.3		7.3	6.9	6.9	7	7.08	
(FWPH)	REQUIREMENT														
RESIDUE PARTIC.	ACTUAL	7.50	4.50	9.75	10.50	58.51		4.55		2.27	76.72	22.73	7.27	19.34	
KG/D (RSP)	GUIDELINE	18.75	18.75	18.75	18.75	18.75		2.84		5.68	25.57	22.73	22.73	17.33	3

NOTE: PH LIMIT 6.5-8.0. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Courtaulds Canada Ltd. and BCL Canada Ltd. Cornwall

INDUSTRIAL SECTOR: Organic Chemicals, Synthetic Fibres

RECEIVING WATERBODY: DIRECT: St. Lawrence River
INDIRECT:

DESCRIPTION OF ACTIVITY: At Courtaulds, dissolving sulphite pulp is reacted to form rayon. At BCL, viscose supplied by Courtaulds is made into cellulose film.

EFFLUENT QUALITY: Contains waste acids and alkalis used in the process.

EFFLUENT TREATMENT: No external effluent treatment.

DISCHARGE TYPE: continuous through diffusers.

COMMENTS:

Requirements are based on Courtaulds' expired Control Order and BCLs' existing Control Order. Courtaulds' was out of compliance with the BOD requirements contained in its expired Control Order. BCL failed to comply with sulphuric acid requirement in it's Order for only one month in 1986. Revised requirements will be set when the new Control Order is issued this year.

IMIS NUMBER: 0001900000 SIC CODE: 183 MOE REGION: Southeast DISTRICT: Cornwall

03/06/87

S U M M A R V FOR EMIS. TYPE: 04 FINAL DISCHARGE - GROSS DATA DISCHARGED INTO: 02/005/ ST. LAWRENCE R.

INCLUDES CONTROL POINTS: 0100 0200 0300 0400

DATA FOR 1986 000190-00-0(0) COURTAULDS-BCL

REPORT DATE: 20 JUNE 87

FLOW/LOADING	PARAMETERS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	8768	8113	8648	9632	9534	9484	10029	10461	11099	10614	9959	10542	9740.25	
M3 /DAY (FTFLOW)	GUIDELINE														
ACIDITY TOTAL	ACTUAL	14200	9900	12500	10400	8400	14700	9200	8200	8500	10300	10000	10000	10525	
KG /DAY (ACDT)	REQUIREMENT	14400	14400	14400	14400	14400	14400	14400	14400	14400	14400	14400	14400	14400	1
BOD 5 DAY	ACTUAL	2056	1888	2889	2254	1971	2536	2062	2360	2015	2088	2290	1805	2184.5	
KG /DAY (BOD5)	REQUIREMENT	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	1700	12
CHEM. OX DEMAND	ACTUAL	4216	4403	4864	4268	3831	4587	4533	4282	3902	4137	4081	3831	4244.58	
KG /DAY (COD)	GUIDELINE	-	-	-	-	-	-	-	-	-	-	-	-	-	
RESIDUE PARTIC.	ACTUAL	335	420	335	287.1	405.6	308	417.3	550	426.8	444.[illegible]	672.4	393.7	416.316	
KG /DAY (RSP)	REQUIREMENT	1490	1490	1490	1490	1490	1490	1490	1490	1490	1[illegible]	1490	1490	1490	
ACIDITY TOTAL	ACTUAL	0.349	0.224	0.282	0.247	0.141	0.264	0.136	0.112	0.106	0.129	0.12	0.115	0.185415	
% WET WT AS H2SO4	GUIDELINE														
ZINC UNF.TOT.	ACTUAL	229	284	403	295	304	294	417	261	226	319	226	244	291.8	
KG /DAY (ZNUT)	REQUIREMENT	615	615	615	615	615	615	615	615	615	615	615	615	615	

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Cyanamid Canada Inc. Niagara Falls

INDUSTRIAL SECTOR: Inorganic Chemicals

RECEIVING WATERBODY: DIRECT: Niagara River and Queenston-Chippewa Hydro Canal to Niagara River
INDIRECT:

DESCRIPTION OF ACTIVITY: Calcium carbide and calcium cyanide are produced by electric arc furnaces.

EFFLUENT QUALITY: Cooling water from furnace operation.

EFFLUENT TREATMENT:

DISCHARGE TYPE: continuous through two outfalls

COMMENTS:

In compliance.

IMIS NUMBER: 0001550003 SIC CODE: 3782 MOE REGION: West Central DISTRICT: Welland

10/06/87

000155-00-0(3) CYANAMID CANADA INC NIAGARA FALLS
S U M M A R Y FOR EMIS. TYPE: 16 FINAL DISCHARGE - NET DATA DISCHARGED INTO: 02/004/ LAKE ONTARIO
INCLUDES CONTROL POINTS: 0100 0200
DATA FOR 1986

FLOW/LOADING	PARAMETERS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	32400	32400	32400	32400	32400	32400	32400	129600	32400	32400	32400	32400	40500	
M3 /DAY (FTFLOW)	GUIDELINE														
BOD 5 DAY	ACTUAL				0	0	0	0						0	
KG /DAY (BOD5)	GUIDELINE				486	486	486	486							
CYANIDE AVAIL	ACTUAL	2.65	1.2852	2.98	1.3176	0.3672	0.0648				0.0756	0.6264	0.108	1.05	
KG /DAY (CCNAUR)	GUIDELINE	64.8	64.8	64.8	64.8	64.8	21.6				21.6	64.8	64.8		
PH	ACTUAL	8.22949	8.60349	8.62	8.9	8.7	7.75	8.65	7.95	7.8	7.75	7.8	8.1	8.24	
(PH)	GUIDELINE														
PHOSPHOR UNF.TOT.	ACTUAL	0.108	3.24							3.24	0.162	0	6.48	2.21	
KG /DAY (PPUT)	GUIDELINE	32.4	32.4							32.4	32.4	32.4	32.4	40.5	
RESIDUE PARTIC.	ACTUAL	313.2	168.5	486	237.6	216	594	75.6	162	86.4	691.2	172.8	75.6	273.24	
KG /DAY (RSP)	GUIDELINE	648	648	648	648	648	648	648	648	648	648	648	648	648	1

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Cyanamid Canada Inc.
& PLANT LOCATION: Welland Plant
Niagara Falls

INDUSTRIAL SECTOR: Organic Chemicals, Synthetic Fibres

RECEIVING WATERBODY: DIRECT: Thompson's Creek to Welland River to Niagara River
INDIRECT:

DESCRIPTION OF ACTIVITY: Manufacturing of organic and inorganic nitrogen (ammonia, urea, nitric acid, ammonium nitrate, dicyamide) and phosphorus products.

EFFLUENT QUALITY: Process and cooling waters.

EFFLUENT TREATMENT: Wastewater discharges to product recovery system, settling lagoons and then to open outfall.

DISCHARGE TYPE: continuous through an open outfall

COMMENTS:

In compliance. Effluent concentrations specified in Control Order. Loadings set by concentrations defined in Control Order.

IMIS NUMBER: 0001550102 SIC CODE: 372 MOE REGION: West Central DISTRICT: Welland

10/06/87

000155-01-0(2) CYANAMID CANADA INC
CONTROL POINT: 0200 DATA FOR 1986

REPORT DATE: 25 JUN 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	33070	26920	33750	30610	22630	23280	23040	23410	24120	26680	26690	33900	27342	
M3 /DAY (FTFLOW)	GUIDELINE														
BOD 5 DAY	ACTUAL		0					0		72.3	0	27.5	0	16.63	
KG /DAY (BOD5)	REQUIREMENT		403.8					345.6		361.8	400.2	400.3	508.5	403.40	
CHROMIUM UNF.TOT.	ACTUAL	6.615	2.7	3.04	2.45	1.81	1.4	1.84	1.4	1.93	0.8	2.07	1.36	2.28	
KG /DAY (CRUT)	REQUIREMENT	33.07	26.92	33.75	30.61	22.63	23.28	23.04	23.41	24.12	26.68	26.69	33.9	27.34	
NH3-N TOTAL	ACTUAL	102.53	72.7	87.74	58.1	47.5	62.9	96.8	117.1	67.5	0	150	78	78.41	
KG /DAY (NNHTFR)	GUIDELINE	330.7	269.2	337.5	306.1	226.3	232.8	230.4	234.1	241.2	266.8	266.9	339	273.42	
KJELDAHL ORGANIC	ACTUAL		27		9.2	0	23.28	0	30.4	7.2	0		0	10.79	
KG /DAY (NNKUR)	GUIDELINE														
NO3-N FIL.REAC	ACTUAL	929.3	856.1	1073	946	640	772.8	891.5	1018.5	1076.5	765.6	710	742.3	868.47	
KG /DAY (NNO3FR)	GUIDELINE														
K'DAHL N TOTAL	ACTUAL	1485	1413.4	1626.56	1224	785.3	889.3	1180	1411.9	1466.7	968.4	1132.8	1244	1235.61	
KG /DAY (NNTKFR)	GUIDELINE														
NITROGEN UNF.TOT.	ACTUAL	2421	2269.5	2709.8	2170.5	1360.1	1662.2	2070.9	2430.3	2593.3	1734.1	1871.1	1986.4	2106.59	
KG /DAY (NNUT)	GUIDELINE														
PH	ACTUAL	6.5	6.3	6.8	6.7	6.5	6.7	6.6	6.4	6.6	6.7	7.4	6.8	6.67	
(PH)	REQUIREMENT														
PHOSPHOR UNF.TOT.	ACTUAL	29.76	26.92	30.37	21.43	18.1	16.29	16.12	9.36	14.47	18.67	16.51	23.7	20.14	
KG /DAY (PPUT)	REQUIREMENT	33.07	26.92	33.75	30.61	22.63	23.28	23.04	23.41	24.12	26.68	26.69	33.9	27.34	
RESIDUE PARTIC.	ACTUAL	0	0	0	0	0	0	0	0	80	0	0	0	6.67	
KG /DAY (RSP)	REQUIREMENT	496.049	403.8	506.249	459.149	339.45	349.2	345.6	351.15	361.8	400.2	400.3	508.5	410.10	

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Denison Mines Ltd. Elliot Lake

INDUSTRIAL SECTOR: Metal Mining, Smelting, Refining

RECEIVING WATERBODY: DIRECT: Stollery Lake to Serpent River
INDIRECT: 70 km to Lake Huron (North Channel)

DESCRIPTION OF ACTIVITY: Ore is mined and milled and separated into tailings and concentrates. Ammonia - based compounds are used in the recovery of uranium.

EFFLUENT QUALITY: Contains dissolved metal salts, ammonia compounds and radioactive material.

EFFLUENT TREATMENT: Lagoon - Two stage treatment consisting of lime addition to the tailings to effect pH control and metals precipitation in tailings area, followed by barium chloride for Ra_{226} precipitation and settling in a polishing pond.

DISCHARGE TYPE: Continuous

COMMENTS:

The radioactivity and chemical parameter limits are set by Canada's Atomic Energy Control Board. Discharge is in compliance with AECB licence requirements.

IMIS NUMBER: 0001680008 SIC CODE(S): 057 MOE REGION: Northeast DISTRICT: Sault Ste. Marie

03/06/87

000168-00-0(8) DENISON MINES LIMITED
CONTROL POINT: 0100 DATA FOR 1986

REPORT DATE: 25 JUN 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	14515.20	13996.80	23846.40	31622.40	24019.20	20131.20	17798.40	17712.00	20736.00	25833.60	15636.40	15379.20	20102.30	
M3 /DAY (FTFLOW)	GUIDELINE														
COPPER UNF.TOT.	ACTUAL				0.63			0.36			0.52			0.40	
KG/D AS CU	GUIDELINE				18.97			10.68			15.50			12.06	
NICKEL UNF.TOT.	ACTUAL				2.53			1.07			1.03			1.21	
KG/D AS NI	GUIDELINE				31.62			17.80			25.83			20.10	
LEAD UNF.TOT.	ACTUAL				3.16			0.53			0.78			1.07	
KG/D AS PB	GUIDELINE				12.65			7.12			10.33			8.04	
PH	ACTUAL	8.90	8.60	8.10	7.20	7.10	7.00	7.00	7.20	7.00	7.40	7.90	7.60	7.58	
(PH)	GUIDELINE														
RADIUM 226 FIL.	ACTUAL	1.10	1.20	1.80	2.30	2.00	2.10	2.40	1.30	1.80	2.80	2.30	2.30	1.95	
PCI/L AS RA	GUIDELINE	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	
RADIUM 226	ACTUAL	26.70	13.80	10.80	58.00	27.10	26.30	29.70	29.30	26.90	46.90	62.10	29.10	32.22	
PCI/L AS RA	GUIDELINE														
RESIDUE PARTIC.	ACTUAL	43.55	14.00	47.69	126.49	24.02	60.39	88.99	53.14	82.94	310.00	203.30	107.65	97.16	
KG/D (RSP)	GUIDELINE	217.73	209.95	357.70	474.34	360.29	301.97	266.98	265.68	311.04	387.50	234.58	230.69	301.53	
ZINC UNF.TOT.	ACTUAL				0.95			0.36			1.29			0.67	
KG/D AS ZN	GUIDELINE				31.62			17.80			25.83			20.10	

NOTE: PH LIMIT 5.5-10.6. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Denison Mines Ltd. (Stanrock) Elliot Lake

INDUSTRIAL SECTOR: Metal Mining, Smelting, Refining

RECEIVING WATERBODY: DIRECT: Serpent River
INDIRECT: 60 km to Lake Huron (North Channel)

DESCRIPTION OF ACTIVITY: Mine is currently closed.

EFFLUENT QUALITY: Contains dissolved metal salts and radioactive material.

EFFLUENT TREATMENT: Tailings area runoff and mine water is treated with lime slurry and barium chloride and precipitation settled in treatment ponds.

DISCHARGE TYPE: Continuous

COMMENTS:

The radioactivity and chemical parameter limits are set by Canada's Atomic Energy Control Board. Discharge in compliance with AECB Licence requirements.

IMIS NUMBER: 0001680206 SIC CODE(S): 057 MOE REGION: Northeast DISTRICT: Sault Ste. Marie

03/06/87

000168-02-0(6) DENISON MINES LTD
CONTROL POINT: D100 DATA FOR 1986

REPORT DATE: 25 JUN 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	1987.20	1728.00	3456.00	6220.80	4320.00	4406.40	4320.00	2592.00	4579.20	5961.60	4233.60	2937.60	3895.19	
M3 /DAY (FTFLOW)	GUIDELINE														
COPPER UNF.TOT.	ACTUAL				0.12			0.09			0.12			0.11	
KG/D AS CU	GUIDELINE				3.73			2.59			3.58			2.34	
NICKEL UNF.TOT.	ACTUAL				0.12			0.09			0.12			0.11	
KG/D AS NI	GUIDELINE				6.22			4.32			5.96			3.90	
LEAD UNF.TOT.	ACTUAL				0.16			0.13			0.18			0.16	
KG/D AS PB	GUIDELINE				2.49			1.73			2.38			1.56	
PH	ACTUAL	10.30	10.20	8.70	10.00	9.20	9.20	7.20	7.90	7.50	7.50	9.30	9.40	8.87	
(PH)	GUIDELINE														
RADIUM 226 FIL.	ACTUAL				2.70									2.70	
PCI/L AS RA	GUIDELINE														
RADIUM 226	ACTUAL	6.00	20.00	2.70	2.90	4.40	2.90	4.70	9.20	4.80	4.00	2.80	2.30	5.56	
PCI/L AS RA	GUIDELINE														
RESIDUE PARTIC.	ACTUAL	5.96	1.73	3.46	24.88	4.32	4.41	4.32	2.59	4.58	5.96	4.23	2.94	5.78	
KG/D (RSP)	GUIDELINE	29.81	25.92	51.84	93.31	64.80	66.10	64.80	38.88	68.69	89.42	63.50	44.06	58.43	
ZINC UNF.TOT.	ACTUAL				0.12			0.09			0.12			0.11	
KG/D AS ZN	GUIDELINE				6.22			4.32			5.96			3.90	

NOTE: PH LIMIT 5.5-10.6. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Denison Mines Ltd. INDUSTRIAL SECTOR: Metal Mining, Smelting, Refining
& PLANT LOCATION: (Williams Lake) (Beaver Pond Outlet)
Elliot Lake

RECEIVING WATERBODY: DIRECT: Williams Lake to Beaver Pond to Serpent River
INDIRECT: 70 km to Lake Huron (North Channel)

DESCRIPTION OF ACTIVITY: Idle tailings area.

EFFLUENT QUALITY: Contains dissolved metal salts and radioactive material.

EFFLUENT TREATMENT: Tailings area runoff is treated with caustic and barium chloride, precipitate settled in Beaver Pond area and effluent discharges to Serpent River.

DISCHARGE TYPE: Continuous

COMMENTS:

The radioactivity and chemical parameter limits are set by Canada's Atomic Energy Control Board. Discharge in compliance with AECB licence requirements.

IMIS NUMBER: 0001680107 SIC CODE(S): 057 MOE REGION: Northeast DISTRICT: Sault Ste.Marie

03/06/87

000168-01-0(7) DENISON MINES LTD
CONTROL POINT: 0100 DATA FOR 1986

REPORT DATE: 25 JUN 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	172.80	172.80	1036.80	3715.20	691.20	406.08	691.20	1468.80	1382.40	1641.60	777.60	432.00	1049.03	
M3 /DAY (FTFLOW)	GUIDELINE														
COPPER UNF.TOT.	ACTUAL				0.07			0.01			0.03			0.02	
KG/D AS CU	GUIDELINE				2.23			0.41			0.98			0.63	
NICKEL UNF.TOT.	ACTUAL				0.07			0.01			0.03			0.04	
KG/D AS NI	GUIDELINE				3.72			0.69			1.64			1.05	
LEAD UNF.TOT.	ACTUAL				0.09			0.02			0.05			0.05	
KG/D AS PB	GUIDELINE				3.72			0.69			1.64			1.05	
PH	ACTUAL	8.50	8.70	8.60	8.50	7.20	7.20	7.10	7.30	7.10	7.60	7.60	7.50	7.74	
(PH)	GUIDELINE														
RADIUM 226 FIL.	ACTUAL	1.50	2.10	2.30	2.20	2.30	2.90	4.50	4.00	3.40	1.80	1.40	1.50	2.49	
PCI/L AS RA	GUIDELINE														
RADIUM 226	ACTUAL	2.20	2.80	3.30	2.90	2.80	3.50	5.90	6.80	4.40	1.80	1.40	2.90	3.39	
PCI/L AS RA	GUIDELINE														
RESIDUE PARTIC.	ACTUAL	0.35	0.17	1.04	3.72	0.69	0.41	0.69	1.47	5.53	1.64	2.33	0.43	1.57	
KG/D (RSP)	GUIDELINE	2.59	2.59	15.55	55.73	10.37	6.09	10.37	22.03	20.74	24.62	11.66	6.48	15.74	
ZINC UNF.TOT.	ACTUAL				0.04			0.01			0.03			0.02	
KG/D AS ZN	GUIDELINE				3.72			0.69			1.64			1.05	

NOTE: PH LIMIT 5.5-10.6. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Detour Lake Mine, Timmins

INDUSTRIAL SECTOR: Metal Mining, Milling, Smelting

RECEIVING WATERBODY: DIRECT: Sunday Lake
INDIRECT: Detour River

DESCRIPTION OF ACTIVITY: Gold mining and milling using carbon-in-pulp method.

EFFLUENT QUALITY: Contains copper and cyanide, and lesser amounts of other heavy metals.

EFFLUENT TREATMENT: Natural degradation in tailings (Note: H_2O_2 plant scheduled to begin treatment of effluent in June/1987)

DISCHARGE TYPE: continuous

COMMENTS:

Detour Lake Mine was out of compliance 11 out of 12 times in 1986 for copper levels. The present Certificate of Approval states that the maximum allowable concentration for Copper at the final discharge is 1.0 mg/l. The annual mean was 1.9 mg/l. The cyanide level, which has a maximum permissible value of 2.0 mg/l in the present C. of A, was always in compliance, averaging 0.2 mg/l. All other metals met the provincial mineral effluent quidelines. In 1985, Detour Lake applied for and received approval for a revision of their C. of A. which would allow them to increase the retention time of their final tailings, hoping this would lower the final copper levels in their effluent. By June 1986, it was evident the anticipated results were not being achieved, and the company was informed it would need a new treatment method. After completing a pilot plant study in mid 1986, the company applied for a Certificate of Approval for treating their effluent with hydrogen peroxide. It is expected that this will be approved and operational by July, 1987.

Four bioassays conducted in 1986 indicated that the mill's effluents were lethal. Statistically, it would require 4.6%, and 35% East Lake effluent and 0.3% and 0.3% Polishing Pond effluent to kill 50 % of the test fish by the end of four days exposure.

IMIS NO.: 0028940005 SIC CODE: 0591 MOE REGION: Northeast DISTRICT: Timmins

26/08/87

002894-00-0(5) DETOUR LAKE MINE LTD.
CONTROL POINT: 0100 DATA FOR 1986

REPORT DATE: 25 JUN 87

CONCENTRATION PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
CYANIDE AVAIL	ACTUAL	0.11	0.25	0.25	0.10	0.83	0.29	0.13	0.09	0.08	0.13	0.12	0.09	0.21	
MG/L AS HCN	GUIDELINE	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	
COPPER UNF.TOT.	ACTUAL	1.76	2.89	1.47	0.91	3.89	3.48	2.25	1.08	1.12	1.36	1.60	1.19	1.91	
MG/L AS CU	GUIDELINE	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	11
NICKEL UNF.TOT.	ACTUAL	0.08	0.08	0.05	0.03	0.11	0.13	0.11	0.06	0.04	0.08	0.07	0.03	0.07	
MG/L AS NI	GUIDELINE	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
LEAD UNF.TOT.	ACTUAL	0.01	0.02	0.05	0.03	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.02	
MG/L AS PB	GUIDELINE	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PH	ACTUAL	7.22	7.20	7.20	7.51	7.68	7.37	7.35	7.47	7.50	7.73	6.94	6.63	7.32	
(PH)	GUIDELINE														
ZINC UNF.TOT.	ACTUAL	0.01	0.01	0.02	0.02	0.01	0.01		0.01	0.01	0.01	0.02	0.01	0.01	
MG/L AS ZN	GUIDELINE	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

NOTE: PH LIMIT 5.5-10.6, 0* INDICATES INTAKE EXCEEDED DISCHARGE, S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Dickenson - Sullivan Joint Venture
Arthur W. White Mine
Township Golden-Balmerton

INDUSTRIAL SECTOR: Metal Mining, Smelting, Refining

RECEIVING WATERBODY: DIRECT: Balmer Creek - Chukuni River
INDIRECT: English River

DESCRIPTION OF ACTIVITY: Gold mining and milling

EFFLUENT QUALITY: May contain heavy metals, cyanide, arsenic

EFFLUENT TREATMENT: Primary tailings disposal area: secondary and tertiary polishing for cyanide removal: total retention of wastewaters during critical late-winter, early summer period for complete cyanide degradation.

DISCHARGE TYPE: Continuous through July - March, each year: no effluent April - June depending on cyanide concentrations.

COMMENTS:

Effluent discharge point shared with Campbell Red Lake Mines Ltd.

The final efluent was sampled seven times during 1986 and tested by aerated 96-hour rainbow trout bioassays (LC50 range of 55 - >100%). Six of the LC50's were >100%.

IMIS NO.: 034880004 SIC CODE: 052 MOE REGION: Northwest DISTRICT: Kenora

17/07/87

003448-00-0(4) DICKENSON SULLIVAN JOINT VENTURE

REPORT DATE: 05 AUG 87

CONTROL POINT: 0100 DATA FOR 1986

CONCENTRATION PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
ARSENIC UNF.TOT.	ACTUAL	0.35	0.30	0.45	0.34	0.42	0.39	0.44	0.61	0.54	0.38	0.33	0.39	0.41	
MG/L (ASUT)	REQUIREMENT	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	2
CYANIDE TOTAL	ACTUAL	0.57	0.19	20.1	0.81	1.98	0.44	0.08	0.09	0.13	0.2	0.29	0.22	2.092	
MG/L (CCNAUR)	REQUIREMENT	2	2	2	2	2	2	2	2	2	2	2	2	2	1
CUMULATIVE METALS	ACTUAL	0.86	0.73	0.68	0.9	1.91	1.34	0.8	1.53	0.63	0.8	0.83	0.87	0.98	
MG/L	REQUIREMENT	1	1	1	1	1	1	1	1	1	1	1	1	1	3

NOTE: PH LIMIT 5.5-10.6. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Dofasco Inc.
& PLANT LOCATION: Hamilton

INDUSTRIAL SECTOR: Iron and Steel

RECEIVING WATERBODY: DIRECT: Hamilton Harbour
INDIRECT: Lake Ontario

DESCRIPTION OF ACTIVITY: All phases of iron & steel production including 246 Coke ovens, 4 Blast Furnaces, 2 B.O.F. shops and numerous rolling mills.

EFFLUENT QUALITY: Contains heavy metals and light organics.

EFFLUENT TREATMENT: Recycle, clarification, filtration, oil recovery, ion exchange and biological treatment.

DISCHARGE TYPE: continuous through five shore outfalls

COMMENTS:

Suspended solids not in compliance.
Future reductions in suspended solids will be accomplished by eliminating overflows from the #1 Hot Mill Filtration Plant, #1 Melt Shop slurry sump and the installation of a Blast Furnace recirculating water system. Phenol exceeded requirement during three months as a result of upsets in biological treatment plant. Phenol reduced by improved on line treatment time for the Zimpro/HCN tower blow down and will be further reduced by diversion of the Biological Treatment Plant effluent to the Sanitary Sewer. Effluent quality met seven of nine target loads based on monthly average.

IMIS NUMBER: 0001460005 SIC CODE: 291 MOE REGION: West Central DISTRICT: Hamilton

25/08/87

000146-00-0(5) DOFASCO INC HAMILTON

S U M M A R Y FOR EMIS. TYPE: 16 FINAL DISCHARGE - NET DATA DISCHARGED INTO: 02/004/ LAKE ONTARIO

INCLUDES CONTROL POINTS: 0100 0200 0300 0400 0600

DATA FOR 1986

REPORT DATE: 25 AUG 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	659546	659546	659546	659546	659546	641362	641362	659546	641362	659546	659546	659546	655000	
M3 /DAY (FTFLOW)	GUIDELINE														
BOD 5 DAY	ACTUAL	-2420	-1808	3616	726	312	8	624	639	222	-385	968	-116	199	
KG /DAY (BOD5)	GUIDELINE	11800	11800	11800	11800	11800	11800	11800	11800	11800	11800	11800	11800	11800	
CYANIDE AVAIL	ACTUAL	32.62	25.13	43.73	28.69	63.58	54.97	64.03	48.7	69.52	74.7	42.22	87.75	53.0	
KG /DAY (CCNAUR)	GUIDELINE	157	157	157	157	157	157	157	157	157	157	157	157	157	
CHROMIUM UNF.TOT.	ACTUAL	0	0	0	0	1.3	0.64	0	0	1.3	0	0	0	0.27	
KG /DAY (CRUT)	GUIDELINE	787	787	787	787	787	787	787	787	787	787	787	787	787	
IRON UNF.TOT.	ACTUAL	4323	6428	6939	5106	7484	10975	1413	2076	4637	1950	2577	2462	4698	
KG /DAY (FEUT)	GUIDELINE	7870	7870	7870	7870	7870	7870	7870	7870	7870	7870	7870	7870	7870	1
NH3-N TOTAL	ACTUAL	515.8	436.2	666.5	627	490.1	472.99	434.37	912.1	459.21	167.1	338.16	203.1	476.89	
KG /DAY (NNMTUR)	GUIDELINE	7870	7870	7870	7870	7870	7870	7870	7870	7870	7870	7870	7870	7870	
PHENOLS UNF-REAC	ACTUAL	47.81	13.48	2.41	1.21	0.7	5.6	22.68	30.79	0.89	1.51	3.2	3	11.11	
KG /DAY (PHNOL)	GUIDELINE	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7	3
PHOSPHOR UNF.TOT.	ACTUAL	3.49	-13.97	-10.9	18.87	0.76	37.7	14.33	19.15	12.35	34.11	-1.765	-9.09	8.8	
KG /DAY (PPUT)	GUIDELINE	787	787	787	787	787	787	787	787	787	787	787	787	787	
RESIDUE PARTIC.	ACTUAL	9151	13042	13860	7243	8775	23982	6886	6987	11655	6456	10624	7518	10515	
KG /DAY (RSP)	GUIDELINE	11800	11800	11800	11800	11800	11800	11800	11800	11800	11800	11800	11800	11800	3
SOLVENT EXTRACT.	ACTUAL	-104.5	109	-586	1	58	.255	108	79	659	268	-191	4	55	
KG /DAY (SOLEXT)	GUIDELINE	11800	11800	11800	11800	11800	11800	11800	11800	11800	11800	11800	11800	11800	
ZINC UNF.TOT.	ACTUAL	191.5	162.25	249.91	62	100.84	483.25	34.2	57.39	111.3	-6.69	56.13	77.38	132	
KG /DAY (ZNUT)	GUIDELINE	787	787	787	787	787	787	787	787	787	787	787	787	787	

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Dome Mines Ltd.
& PLANT LOCATION: South Porcupine

INDUSTRIAL SECTOR: Metal Mining, Smelting, Refining

RECEIVING WATERBODY: DIRECT: Swamp
INDIRECT: South Porcupine River

DESCRIPTION OF ACTIVITY: Gold is recovered using Merryl-Crowe process.

EFFLUENT QUALITY: Contains cyanide, copper, lead, nickel and zinc.

EFFLUENT TREATMENT: None

DISCHARGE TYPE: Continuous

COMMENTS:

In 1986, the Dome Mines Ltd. discharge exceeded the cumulative heavy metal guideline (Cu, Pb, Ni, Zn) of 1.0 mg/l for 9 months out of 12. The exceedances were attributed to an increase in copper and nickel values. A monthly exceedance occurred once for copper. The company has provided a contingency plan to eliminate exceedances for 1987. Compliance samples were taken on three occasions in 1986 and the results showed compliance with guideline limits. The guidelines referred to are "Guidelines for Environmental Control in the Ontario Mineral Industry, MOE Oct.1, 1981".

Two bioassays conducted in 1986 indicated that it would take statistically, 33.9% and 69.8% effluent to kill 50% of the test fish by the end of a four day exposure.

IMIS NO.: 0001170000 SIC CODE: 052, 0591 MOE REGION: Northeast DISTRICT: Timmins

26/08/87

000117-00-0(0) DOME MINES LIMITED
CONTROL POINT: 0100 DATA FOR 1986

REPORT DATE: 26 AUG 87

CONCENTRATION PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
CYANIDE FREE	ACTUAL	1.36	2.40	2.95	1.86	0.61	0.10	0.10	0.09	0.10	0.07	0.17	0.35	0.85	
MG/L AS HCN	GUIDELINE	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	
COPPER UNF.TOT.	ACTUAL	1.10	1.51	1.49	0.76	0.69	0.50	0.50	0.50	0.49	3.80	0.54	0.72	1.05	
MG/L AS CU	GUIDELINE	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2
IRON UNF.TOT.	ACTUAL	0.49	0.83	1.27	1.17	0.95	0.68	0.68	0.26	0.65	0.60	0.68	0.73	0.75	
MG/L AS FE	GUIDELINE														
NICKEL UNF.TOT.	ACTUAL	0.65	0.64	0.59	0.37	0.45	0.42	0.46	0.29	0.34	1.16	0.42	0.48	0.53	
MG/L AS NI	GUIDELINE	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*
LEAD UNF.TOT.	ACTUAL			0.15			0.20	0.17	0.05	0.05	0.14	0.05	0.01	0.13	
MG/L AS PB	GUIDELINE			1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PH	ACTUAL	7.20	7.10	7.00	7.30	7.90	8.00	8.00	7.80	7.70	7.60	7.60	7.60	7.59	
(PH)	GUIDELINE														
ZINC UNF.TOT.	ACTUAL	0.22	0.25	0.27	0.10	0.12	0.10	0.10	0.01	0.24	2.81	0.12	0.15	0.37	
MG/L AS ZN	GUIDELINE	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	*

NOTE: PH LIMIT 5.5-10.6. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: & PLANT LOCATION: Domtar Chemicals Ltd.
Sifto Salt Division
Goderich

INDUSTRIAL SECTOR: Industrial Minerals

RECEIVING WATERBODY: DIRECT: Maitland River
INDIRECT: Lake Huron

DESCRIPTION OF ACTIVITY: Salt is mined and purified for use.

EFFLUENT QUALITY: Contains dissolved chlorides and sulphates of sodium, calcium etc.

EFFLUENT TREATMENT: Settling basins.

DISCHARGE TYPE: continuous

COMMENTS:

In compliance. Monitoring indicated a 50% reduction in loadings of dissolved solids from 1985 to 1986. The Ministry is currently assessing this data with comparisons made to historical data.

IMIS NUMBER: 0000140707 SIC CODE: 079 MOE REGION: Southwest DISTRICT: Owen Sound

000014-07-0(7) DOMTAR CHEMICALS GROUP SIFTO SALT DIVISION

CONTROL POINT: 0100 DATA FOR 1986

REPORT DATE 21 JUL 87

CONCENTRATION PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW M3 /DAY (FTFLOW)	ACTUAL	8312	9160	9365	9467	9426	10300	10058	9728		9365	11865	9289	9666.82	
	GUIDELINE														
CHLORIDE UNF.REAC MG/L AS CL	ACTUAL	2048	1304	1522	2062	1431	1560	771	1035		1965	2089	1568	1577.72	
	GUIDELINE														
PH (PH)	ACTUAL	8.2	8.1	7.9	8	8.1	8.1	8.1	8		8.2	8	8.1	8.07272	
	GUIDELINE														
RESIDUE FILTERED MG/L (RSF)	ACTUAL	3686	2994	3216	4303	3211	3550	2136	2562		3809	3962	3115	3322.18	
	GUIDELINE														
RESIDUE PARTIC. MG/L (RSP)	ACTUAL	89	51	71	101	64	85	38	44		69	86	43	67.3636	
	GUIDELINE														
RESIDUE TOTAL MG/L (RST)	ACTUAL	3775	3045	3287	4404	3275	3636	2173	2606		3879	4048	3357	3407.72	
	GUIDELINE														

NOTE: PH LIMIT 5.5-9.5. J* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: & PLANT LOCATION: Domtar Chemical Grp.
CDC Division
Orillia

INDUSTRIAL SECTOR: Organic Chemicals, Synthetic Fibres

RECEIVING WATERBODY: DIRECT: Lake St. John
INDIRECT: Georgian Bay

DESCRIPTION OF ACTIVITY: Produces detergents and detergent bases from ethylene oxide, fatty acids, ethylamines, etc.

EFFLUENT QUALITY:

EFFLUENT TREATMENT: Aeration lagoon.

DISCHARGE TYPE: Continuous - treated wastewaters are joined by clean cooling water prior to discharge.

COMMENTS:

In compliance. MISA Audit sampling completed early 1987.

IMIS NO.: 0000140004 SIC CODE: 376 MOE REGION: Central DISTRICT: Barrie

03/06/87

000014-00-0(4) DOMTAR CHEMICAL GROUP: CDC DIVISION
CONTROL POINT: D100 DATA FOR 1986

FLOW/CONCENTRATION PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
NH3-N TOTAL	ACTUAL	0.55	0.6	0.4	0.6	0.6	0.65	0.4	0.5	0.4	0.5	0.6	0.9	0.56	
MG/L (NNHTUR)	GUIDELINE	10	10	10	10	10	10	10	10	10	10	10	10	10	
NO3-N UNF.REAC	ACTUAL	0	0	0	0	0	0.275	0.04	2	0	0	0.01	0	0.19	
MG/L (NNO3UR)	GUIDELINE														
PH	ACTUAL	7.65	7.6	7.6	7.6	7.6	7.625	7.8	8.1	7.9	7.7	7.7	7.9	7.7	
(PH)	GUIDELINE														
PHENOLS UNF-REAC	ACTUAL	0	0	0	0	0	0	0	0	0	0	0	0	0.0025	
MG/L (PHNOL)	GUIDELINE	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	
PHOSPHOR UNF.TOT.	ACTUAL	0.01	0.03	0.03	0.05	0.04	0.0225	0.02	0.02	0.01	0.03	0.01	0.02	0.024375	
MG/L (PPUT)	GUIDELINE	1	1	1	1	1	1	1	1	1	1	1	1	1	
RESIDUE FILTERED	ACTUAL	11.75	14	10	8	10	7.25	9	9	11	9	10	9	9.83	
MG/L (RSF)	GUIDELINE														
CARBON TOTAL	ACTUAL	8.95	10.4	7.5	7.6	12.3	7.75	6.8	7.2	7.5	7.8	9.1	10.1	8.58	
MG/L (TOC)	GUIDELINE														

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE, S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Domtar Construction Materials Ltd. (Allanburg) Thorold

INDUSTRIAL SECTOR: Pulp and Paper Mill

RECEIVING WATERBODY: DIRECT: Old Welland Canal to Twelve Mile Creek
INDIRECT: 15.1 km to Lake Ontario

DESCRIPTION OF ACTIVITY: Pulp, shavings, etc. are converted into roof felts and sheathing.

EFFLUENT QUALITY: Cooling and waste water discharge.

EFFLUENT TREATMENT: Wastewater (paper machine and flooring wash waters) is recycled. "Saveall" screen used to recycle fibre.

DISCHARGE TYPE: continuous into a buried portion of the Old Welland Canal.

COMMENTS:

BOD not in compliance. Target loads set by Pulp and Paper Committee consistent with Best Practicable Technology. Company connecting to the sanitary sewer June 1987. Previous survey will not be completed.

This discharge is toxic to fish. A bioassay conducted in 1986, indicated that it would take, statistically, 5.7 % effluent to kill 50 % of the fish by the end of four days exposure.

IMIS NUMBER: 0000140400 SIC CODE: 271 MOE REGION: West Central DISTRICT: Welland

10/06/87

000014-04-0(0) DOMTAR CONSTRUCTION MATERIALS LTD.
CONTROL POINT: 0100 DATA FOR 1986

REPORT DATE: 25 JUN 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	627	549.8	567	504	549	556.4	693.9	706.9	608.8	674	802	823	638.48	
M3 /DAY (FTFLOW)	GUIDELINE														
BOD 5 DAY	ACTUAL	834	886	826	687	684	569	819	1083	664	660	806	720	769.83	
KG /DAY (BOD5)	GUIDELINE	450	450	450	450	450	450	450	450	450	450	450	450	450	12
RESIDUE PARTIC.	ACTUAL	292	228	172	146	156.5	143	189	179	112	152	205	177	179.29	
KG /DAY (RSP)	GUIDELINE	450	450	450	450	450	450	450	450	450	450	450	450	450	

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE, S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Domtar Fine Papers
& PLANT LOCATION: Cornwall

INDUSTRIAL SECTOR: Pulp and Paper Mill

RECEIVING WATERBODY: DIRECT: St. Lawrence River
INDIRECT:

DESCRIPTION OF ACTIVITY: Fine paper is made from logs and chips by the kraft pulping process and from purchased pulp.

EFFLUENT QUALITY: Contains dissolved and suspended solids generated from the pulping of wood, the bleaching of pulp and the manufacture of paper.

EFFLUENT TREATMENT: Primary using a clarifier.

DISCHARGE TYPE: Continuous through a submerged diffuser

COMMENTS:

A production-based total suspended solids limit was to become effective June 30, 1987. The company has asked for an extension until January 31,1989. This request has been approved within the Ministry and a Notice has been issued to Domtar. The amending Control Order will be issued shortly. BOD and Suspended Solids discharges are in compliance with Federal Guideline limits.

The final treated effluent from this mill is normally not toxic to fish, however one of two bioassays conducted in 1986, indicated that it would take, statistically, 36.2 % effluent to kill 50 % of the test fish within four days of exposure. The second bioasssay showed the effluent to have been non-lethal to test fish.

IMIS NUMBER: 0000140301 SIC CODE: 271 MOE REGION: Southeast DISTRICT: Cornwall

03/06/87

000014-03-0(1) DOMTAR FINE PAPERS
CONTROL POINT: 0100 DATA FOR 1986

REPORT DATE: 20 JUN 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	95300	96000	96200	99000	100100	102000	108400	103900	106400	103600	102800	95300	100750	
M3 /DAY (FTFLOW)	GUIDELINE														
BOD 5 DAY	ACTUAL	16900	16800	16400	16300	13000	16400	15000	13300	15200	15900	16300	10200	15141.6	
KG /DAY (BOD5)	REQUIREMENT	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	
RESIDUE FILTERED	ACTUAL	108800	93300	92000	98600	89200	96700	95700	87400	96100	94200	92700	97100	95150	
KG /DAY (RSF)	GUIDELINE														
RESIDUE PARTIC.	ACTUAL	10000	8200	7600	7200	7800	6500	7800	8300	8900	8300	6500	7800	7908.33	
KG /DAY (RSP)	REQUIREMENT	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Domtar Fine Papers
& PLANT LOCATION: St. Catharines

INDUSTRIAL SECTOR: Pulp and Paper Mill

RECEIVING WATERBODY: DIRECT: Old Welland Canal to Twelve Mile Creek
INDIRECT: 9.1 km to Lake Ontario

DESCRIPTION OF ACTIVITY: Pulp and clean waste paper are converted into paper products.

EFFLUENT QUALITY: Enough fibres (fine) to make effluent look "milky".

EFFLUENT TREATMENT: Extensive reuse of wastewater and primary clarifier (preceded by several "Savealls" and screens. Type of starch used was changed to reduce BOD load.

DISCHARGE TYPE: continuous through an open outfall

COMMENTS:

Effluent quality met Total Suspended Solids guideline but not Biochemical Oxygen Demand Limit. Target loads set by Pulp and Paper Committee with Best Practicable Technology.

IMIS NUMBER: 0000140509 SIC CODE: 271 MOE REGION: West Central DISTRICT: Welland

10/06/87

000014-05-0(9) DOMTAR FINE PAPERS

CONTROL POINT: 0100 DATA FOR 1986

REPORT DATE: 25 JUN 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	10.07	9.888	9.655	9.933	9.787	9.218	9.688	9.946	9.864	9.875	9.645	9.449	9.75	
M3 /DAY (FTFLOW)	GUIDELINE														
BOD 5 DAY	ACTUAL	820	830	792	794	714	654	717	746	700	671	723	699	738.33	
KG /DAY (BOD5)	GUIDELINE	350	350	350	350	350	350	350	350	350	350	350	350	350	12

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

CONTROL POINT: 0300 DATA FOR 1986

REPORT DATE: 25 JUN 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
RESIDUE FILTERED	ACTUAL			1641	2343	1780	1880	1675	2038	1636	1589	2082	1803	1846.7	
KG /DAY (RSF)	GUIDELINE														
RESIDUE PARTIC.	ACTUAL		257	135	79	68	55	39	0	0	20	87	0	67.27	
KG /DAY (RSP)	GUIDELINE		350	350	350	350	350	350	350	350	350	350	350	350	

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Domtar Packaging Ltd. INDUSTRIAL SECTOR: Pulp and Paper Mill
& PLANT LOCATION: Red Rock

RECEIVING WATERBODY: DIRECT: Lake Superior (Nipigon Bay)
INDIRECT:

DESCRIPTION OF ACTIVITY: Softwood logs and chips are made into newsprint and liner board by the groundwood and kraft processes. Kraft mill semi-bleaches some pulp.

EFFLUENT QUALITY: Contains suspended solids (bark and wood fibre) and organic compounds (some chlorinated) from the pulping process.

EFFLUENT TREATMENT: Clarifier for high solids wastewaters and spill pond. Foul condensates are steam stripped of odourous organic compounds.

DISCHARGE TYPE: Continuous surface with a separate clean cooling water discharge.

COMMENTS:

In compliance. A Control Order was issued on Sept. 29, 1986. The Company is required to meet specific BOD and TSS loadings averaged over 30 consecutive working days on the total mill effluent discharged (BOD - 23 metric tonnes/day [23,000 kg/day] and suspended solids - 5.5 metric tonnes/day [5,500 kg/day]). In addition, the Company is required to meet a toxicity requirement.

The final effluent was sampled eight times during 1986 and tested by aerated 96-hr. rainbow trout bioassays (LC50 range of 45.1->100%). Five of the samples had an LC50 range of >80%. Four of the eight samples had an LC50 of >100%, therefore, effluent has been found to be generally non-lethal.

IMIS NUMBER: 0000140202 SIC CODE(S): 271 MOE REGION: Northwest DISTRICT: Thunder Bay

27/07/87

000014-02-0(2) DOMTAR PACKAGING LTD.
CONTROL POINT: 0100 DATA FOR 1986

REPORT DATE: 26 AUG 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	87035	86970	90800	88530	95615	95850	97240	99140	94300	91380	75800	92440	91258.3	
M3 /DAY (FTFLOW)	GUIDELINE														
BOD 5 DAY	ACTUAL	17700	17430	22340	15980	16180	14850	15560	18800	15610	18770	14060	19080	17196.6	
KG /DAY (BOD5)	REQUIREMENT	23000	23000	23000	23000	23000	23000	23000	23000	23000	23000	23000	23000	23000	
PHOSPHOR UNF.TOT.	ACTUAL	15.06	44.79	14.89	14.52	21.04	21.09	18.48	21.81	20.75	6.4	11.37	13.87	18.6724	
KG /DAY (PPUT)	GUIDELINE	-	-	-	-	-	-	-	-	-	-	-	-		
RESIDUE PARTIC.	ACTUAL	4780	4800	4620	4990	4130	3280	3000	3870	3400	3520	3900	4160	4037.5	
KG /DAY (RSP)	REQUIREMENT	5500	5500	5500	5500	5500	5500	5500	5500	5500	5500	5500	5500	5500	

NOTE: PH LIMIT 5.5-9.5, 0* INDICATES INTAKE EXCEEDED DISCHARGE, S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Domtar Packaging
& PLANT LOCATION: Trenton

INDUSTRIAL SECTOR: Pulp and Paper Mill

RECEIVING WATERBODY: DIRECT: Trent River
INDIRECT: Lake Ontario (Bay of Quinte)

TYPE OF ACTIVITY: Hardwood (maple, poplar) chips are made into pulp by a sodium carbonate cook; the pulp is formed into corrugating medium.

EFFLUENT QUALITY: Solids are removed from the paper machine whitewaters by side screens and a disc filter. Some process effluent is discharged with the cooling water.

EFFLUENT TREATMENT: Spent cooking liquor is stored separately for use as a binder (30 years of experience). To eliminate odour complaints, switch was made from sulphur cooking to carbonate chemicals.

DISCHARGE TYPE: Continuous diffuser.

COMMENTS:

Suspended Solids not in compliance with Federal Regulation. BOD requirement is based on an assumption for a calcium carbonate cook to fill a gap in the Federal Guideline for Pulp and Paper. A new paper machine was put on stream January 1986. Effluent requirements and a Control Order are under development.

A bioassay conducted in 1986, indicated that it would take statistically, 30.4% effluent to kill 50% of the fish by the end of a four day exposure.

IMIS NUMBER: 0000140608 SIC CODE: 271 MOE REGION: Southeast DISTRICT: Kingston

03/06/87

000014-06-0(8) DOMTAR PACKAGING
CONTROL POINT: 0100 DATA FOR 1986
FLOW/LOADING PARAMETERS

REPORT DATE: 20 JUN 87

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	1633	2122	3671	4501	3714	4017	4480	3835	4087	3906	4494	3571	3669.25	
M3 /DAY (FTFLOW)	GUIDELINE														
BOD 5 DAY	ACTUAL	3408.1	3724.1	6483.0	6013.3	4490.2	5812.6	5900.2	5012.3	6678.2	7276.9	7554.4	6249.3	5856.1	
KG/D (BOD5)	GUIDELINE	5523.0	5523.0	5523.0	5523.0	5523.0	5523.0	5523.0	5523.0	5523.0	5523.0	5523.0	5523.0	5523.0	8
RESIDUE FILTERED	ACTUAL	5671.4	5984.0	9654.7	9722.2	6610.9	8757.1	11513.6	8993.1	11852.3	12358.6	12097.8	10616.6	9688.9	
KG/D (RSF)	GUIDELINE	-	-	-	-	-	-	-	-	-	-	-	-	-	
RESIDUE PARTIC.	ACTUAL	421.3	636.6	3619.6	2102.0	2302.7	1385.9	1478.4	2684.5	2247.9	2203.0	2822.2	2046.2	1932.8	
KG/D (RSP)	GUIDELINE	1140.0	1140.0	1140.0	1140.0	1140.0	1140.0	1140.0	1140.0	1140.0	1140.0	1140.0	1140.0	1140.0	10

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE, S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Domtar Wood Preserving, Trenton

INDUSTRIAL SECTOR: Wood Preserver

RECEIVING WATERBODY: DIRECT: Trent River
INDIRECT: Bay of Quinte, Lake Ontario

DESCRIPTION OF ACTIVITY: Wood preserving: Creosote and oil for hardwood railway ties and oil and pentachlorophenol for utility poles.

EFFLUENT QUALITY: Contamination by chlorophenol, phenols and low levels of dioxins and furans.

EFFLUENT TREATMENT: A portion of the discharge is treated using activated carbon filters.

DISCHARGE TYPE: Continuous

COMMENTS:

Domtar will be submitting an application for approval of an upgrade to their effluent treatment process in the spring of 1987. Existing effluent objectives only for carbon filtration system effluent set out in Certificate of Approval #4-081-81 dated September 21st, 1982. Phenols: 20 micrograms/L; maximum loading .014 kg/day. Pentachlorophenol: 100 micrograms/L; maximum loading 0.68 kg/day. Effluent objectives will be reviewed for revision on new Certificate of Approval for upgraded treatment process. New objectives will consider <u>total</u> loading from all discharges. Treatment unit effluent to be added as IMIS reporting location to permit compliance assessment.

IMIS NO.:0000141200 SIC CODE:2591 MOE REGION: Southeast DISTRICT: Kingston

03/06/87

S U M M A R Y FOR EMIS. TYPE: 04 FINAL DISCHARGE - GROSS DATA DISCHARGED INTO: 02/004/1220 TRENT R.
INCLUDES CONTROL POINTS: 0100 0200
DATA FOR 1986 000014-12-0(0) DOMTAR WOOD PRESERVING

REPORT DATE: 20 JUNE 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	362	275	16165	1052	982	1010	939	312	449	382	410	558	1908	
M3 /DAY (FTFLOW)	GUIDELINE														
PHENOLS UNF-REAC	ACTUAL	0.042	0.014	0.322	0.212	0.382	0.009	0.013	0.075	0.042	0.063	0.071	0.233	0.123	
KG/D (PHNOL)	GUIDELINE	0.036	0.028	1.617	0.105	0.098	0.101	0.094	0.031	0.045	0.038	0.041	0.056	0.191	7
SOLVENT EXTRACT.	ACTUAL	0.349	1.726	14.509	3.577	4.815	6.537	0.549	3.898	2.959	3.694	1.922	2.615	3.929	
KG/D (SOLEXT)	GUIDELINE	5.430	4.125	242.475	15.780	14.730	15.150	14.085	4.680	6.735	5.730	6.150	8.370	28.620	
PENTACHL PHENOL	ACTUAL	0.530	0.246	0.373	0.341	0.113			0.015	1.407	0.433	0.646	0.335	0.370	
KG/D (X3PCPH)	GUIDELINE														

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Dow Chemical Canada Inc. Sarnia

INDUSTRIAL SECTOR: Organic Chemicals, Synthetic Fibres

RECEIVING WATERBODY: DIRECT: St. Clair River
INDIRECT:

DESCRIPTION OF ACTIVITY: Brine and feed from the petroleum refineries are used to make a wide range of chlorine related products.

EFFLUENT QUALITY: Contains a great variety of chlorinated hydrocarbons.

EFFLUENT TREATMENT:

DISCHARGE TYPE: continuous through seven outfalls

COMMENTS:

In compliance.

Four bioassays conducted in 1986 indicated that the discharges from th 54" sewer, 42" sewer, 3rd St. sewer and the 4th St. sewer were all non-lethal to fish.

IMIS NUMBER: 0000910109 SIC CODE: 373 MOE REGION: Southwest DISTRICT: Sarnia

26/08/87

000091-01-0(9) DOW CHEMICAL CANADA INC SARNIA DIVISION PO BOX 3030 SARNIA

S U M M A R Y FOR EMIS. TYPE: 16 FINAL DISCHARGE - NET DATA DISCHARGED INTO: 02/003/ LAKE ERIE

INCLUDES CONTROL POINTS: 0200 0300 0500 0600 0700 0900 1000

DATA FOR 1986

REPORT DATE: 23 JUL 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	922999	941999	945999	945999	945999	196000	647981	673758	685261	748330	774140	729033	762710	
M3 /DAY (FTFLOW)	GUIDELINE														
ALK TOTAL	ACTUAL	0	0	0	0	0	0	0	0	0	0	0	0	0	
KG /DAY (ALKT)	GUIDELINE														
PH	ACTUAL	8.15713	8.0857	8.01427	7.8857	8.11427	8.1857	8.17142	8.2	8.2857	8.22856	8.1	8.02856	8.12	
(PH)	GUIDELINE														
PHENOLS UNF-REAC	ACTUAL	2.71	3.3	2.47	2.32	1.84	1.44	0.86	0.97	0.97	1.25	1.91	1.79	1.82	
KG /DAY (PHNOL)	GUIDELINE	18.5	18.8	18.9	18.9	18.9	3.9	13.0	13.5	13.7	15.0	15.5	14.6	15.3	
RESIDUE PARTIC.	ACTUAL	1840	1380	1950	3060	1730	750	1360	1680	1488	360	1670	1220	1540.66	
KG /DAY (RSP)	GUIDELINE	13845	14130	14190	14190	14190	2940	9720	10106	10279	11225	11612	10935	11441	
CARBON TOTAL	ACTUAL	1155	1084	630	846	803	750	615.809	630	433.1	543.6	670	460	718.38	
KG /DAY (TOC)	GUIDELINE														

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Dupont Canada Inc. Corunna

INDUSTRIAL SECTOR: Organic Chemical, Synthetic Fibres

RECEIVING WATERBODY: DIRECT: St. Clair River
INDIRECT:

DESCRIPTION OF ACTIVITY: Feedstock (ethylene) from the petroleum refineries in Sarnia is used to make plastics.

EFFLUENT QUALITY: Contains organic compounds at trace levels

EFFLUENT TREATMENT:

DISCHARGE TYPE: continuous at shore

COMMENTS:

In compliance.

IMIS NUMBER: 0000080309 SIC CODE: 373 MOE REGION: Southwest DISTRICT: Sarnia

26/08/87

000008-03-0(9) DU PONT CANADA INC ST CLAIR RIVER WORKS
CONTROL POINT: 0200 DATA FOR 1986

REPORT DATE: 23 JUL 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	37083.7	33004.8	38353.8	40883.6	40883.6	43200	52704	59616	54432	38880	51840	45792	44722.8	
M3 /DAY (FTFLOW)	GUIDELINE														
PHENOLS UNF-REAC	ACTUAL	0.05	0.07	0.7	0.08	0.08	0.12	0.11	0.15	0.17	0.33	1	0.09	0.245832	
KG /DAY (PHNOL)	GUIDELINE	0.74	0.66	0.77	0.82	0.82	0.86	1.05	1.19	1.09	0.78	1.04	0.92	0.89	

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: & PLANT LOCATION: Dupont Canada Ltd. (Kingston Works) Kingston

INDUSTRIAL SECTOR: Organic Chemicals, Synthetic Fibres

RECEIVING WATERBODY: DIRECT: 0.9 Km to Lake Ontario
INDIRECT:

DESCRIPTION OF ACTIVITY: Adipic acid and Hexamethlyenediamine react to form a synthetic-nylon.

EFFLUENT QUALITY: Contains soluble and insoluble organics such as phenols.

EFFLUENT TREATMENT: Partial settling.

DISCHARGE TYPE: Continuous

COMMENTS:

In compliance. Total Organic Carbon analyzer out of service for the first 6 months of 1986.

IMIS NUMBER: 0000080101 SIC CODE: 183 MOE REGION: Southeast DISTRICT: Kingston

03/06/87

000008-01-0(1) DUPONT CANADA INC. KINGSTON TOWNSHIP

S U M M A R Y FOR EMIS. TYPE: 04 FINAL DISCHARGE - GROSS DATA DISCHARGED INTO: 02/004/ LAKE ONTARIO

INCLUDES CONTROL POINTS: 0100 0200

DATA FOR 1986

REPORT DATE: 28 JUL 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	48220	41420	44620	46834	62954	83514	98358	109612	110532	95166	58756	46644	70552.5	
M3 /DAY (FTFLOW)	GUIDELINE														
DOWTHERM	ACTUAL	0	0	0	0	0	0	0	0	0	0	0	0	0	
MG/L (IWDOWT)	GUIDELINE														
PH	ACTUAL	8.24	8.18	7.89	7.77	7.805	7.825	7.86	7.895	8.015	8.015	7.965	8.03	7.957	49
(PH)	GUIDELINE														
PHENOLS UNF-REAC	ACTUAL	0	0.024	0.009	0	0	0.125	0.625	0.893	0.542	0.233	0.032	0.004	0.146	
KG/D (PHNOL)	GUIDELINE	0.964	0.828	0.892	0.937	1.259	1.670	1.967	2.192	2.211	1.903	1.175	0.933	1.411	
CARBON TOTAL	ACTUAL							3378.6	2488.2	3697.3	1061.1	805.0	543.4	1493.4	
KG/D AS C (TOC)	GUIDELINE							9835.8	10961.2	11053.2	9516.6	5875.6	4664.4	7055.3	

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Dupont Canada Inc.
& PLANT LOCATION: Maitland

INDUSTRIAL SECTOR: Organic Chemicals, Synthetic Fibres

RECEIVING WATERBODY: DIRECT: St. Lawrence River
INDIRECT:

DESCRIPTION OF ACTIVITY: Chemicals are converted to precursors of nylon, engineered plasitcs, spandex yarn, hydrogen peroxide and chlorofluorcarbons.

EFFLUENT QUALITY: Contains soluble and insoluble organics.

EFFLUENT TREATMENT: Activated sludge, pre-denitrification/nitrification.

DISCHARGE TYPE: Continuous

COMMENTS:

Suspended Solids wastewater from treatment plant not in compliance with its C. of A (Not a control point). The effluent from this plant combines with effluent from the tetra-ethyl lead plant through a common outfall. (control point 0200). The Suspended Solids objective is based on an old 15 mg/Litre guideline. This will be reviewed under the MISA program.

IMIS NUMBER: 0000080002 SIC CODE: 3783 MOE REGION: Southeast DISTRICT: Kingston

24/08/87

000008-00-0(2) DUPONT CANADA INC. MAITLAND

S U M M A R Y FOR EMIS. TYPE: 04 FINAL DISCHARGE - GROSS DATA DISCHARGED INTO: 02/005/ ST. LAWRENCE R.

INCLUDES CONTROL POINTS: 0100 0200 0300

DATA FOR 1986

REPORT DATE: 28 JUL 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	159300	173730	165100	172720	146360	151270	120990	168920	158280	158460	135140	146760	154753	
M3 /DAY (FTFLOW)	GUIDELINE														
BOD 5 DAY	ACTUAL	1936	1565.39	1812.5	917.7	968.3	922.7	1451.09	926.2	971.6	508.4	1317.59	1058.69	1196.34	
KG /DAY (BOD5)	GUIDELINE	2340	2593.5	2467.5	2583	2193	2266.5	1812	2532	2371.5	2374.5	2025	2199		
KJELDAHL ORGANIC	ACTUAL	1978.7	1073.19	866.2	910.4	381.4	231	271	205.9	298.5	167.2	320.3	413.8	593.131	
KG /DAY (NNKUR)	GUIDELINE														
RESIDUE PARTIC.	ACTUAL	2645	2783.59	1974.09	2052.59	491.7	326.9	207.5	511.6	194.9	238.6	214	2075.09	1142.96	
KG /DAY (RSP)	GUIDELINE	2340	2593.5	2467.5	2583	2193	2266.5	1812	2532	2371.5	2374.5	2025	2199	2313.13	2
CARBON TOTAL	ACTUAL	1685.3	1658.19	1470.79	744.8	654.1	557.8	789.4	594.6	597.3	362.5	847.5	713.4	889.639	
KG /DAY (TOC)	GUIDELINE														

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Dupont Canada Inc.
& PLANT LOCATION: Maitland

INDUSTRIAL SECTOR: Organic Chemicals, Synthetic Fibres

RECEIVING WATERBODY: DIRECT: St. Lawrence River
INDIRECT:

DESCRIPTION OF ACTIVITY: Tetra-ethyl lead is made from a lead-sodium alloy and ethyl chloride.

EFFLUENT QUALITY: Contains elemental and alkyl lead.

EFFLUENT TREATMENT: Settling

DISCHARGE TYPE:

COMMENTS:

Plant closed down June 30, 1985. Decommissioning continued until February 1986. Control point 0100 is no longer a monitoring station since blocked off as of May 1, 1986, and is no longer a source of tetra-ethyl lead to the the St. Lawrence River.

IMIS NUMBER: 0000080002 SIC CODE: 3783 MOE REGION: Southeast DISTRICT: Kingston

03/06/87

000008-00-0(2) DUPONT CANADA INC.
CONTROL POINT: 0100 DATA FOR 1986

REPORT DATE: 30 JUN 87

CONCENTRATION PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	3100	700	500	300	0	0	0	0	0	0	0	0	383.333	
M3 /DAY (FTFLOW)	GUIDELINE														
LEAD UNF.TOT.	ACTUAL	0.8	1.58	3.33	3	0	0	0	0	0	0	0	0	0.725832	
MG/L (PBUT)	GUIDELINE	1	1	1	1	1	1	1	1	1	1	1	1	1	3

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: DuPont Canada Inc.
& PLANT LOCATION: Nipissing Works
North Bay

INDUSTRIAL SECTOR: Inorganic Chemicals

RECEIVING WATERBODY: DIRECT: Wasa River - Lake Nipissing
INDIRECT: 121 km from French R. Main Channel

DESCRIPTION OF ACTIVITY: Production of explosives.

EFFLUENT QUALITY: Contains nitrates and ammonia.

EFFLUENT TREATMENT: Equalization pond for pH control.

DISCHARGE TYPE: Continuous

COMMENTS:

Company in compliance except for Ammonia for the month of August. There are two outfalls: pond effluent and building #339 effluent.

A bioassay conducted in 1986 indicated that the main effluent was not acutely lethal to fish.

IMIS NO.: 0000080200 SIC CODE: 379 MOE REGION: Northeast DISTRICT: North Bay

03/06/87

000008-02-0(0) DUPONT CANADA INC NIPISSING WORKS NORTH BAY ONT

S U M M A R Y FOR EMIS. TYPE: 04 FINAL DISCHARGE - GROSS DATA DISCHARGED INTO: 02/002/5430 FRENCH R. MAIN CHANNEL

INCLUDES CONTROL POINTS: 0100 0200

DATA FOR 1986

REPORT DATE: 30 JUL 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	3204.20	3343.00	4395.00	4411.10	4148.00	4016.00	3471.00	3213.70	2776.19	3188.40	3043.00	3289.30	3541.56	
M3 /DAY (FTFLOW)	GUIDELINE														
NH3-N TOTAL	ACTUAL	20.80	9.30	12.90	15.40	19.40	14.80	21.40	47.80	11.30	30.70	14.90	15.50	19.52	
KG /DAY (NNHTFR)	GUIDELINE	32.04	33.43	43.95	44.11	41.48	40.16	34.71	32.14	27.76	31.88	30.43	32.89	35.42	1
NO2+NO3N FIL.REAC	ACTUAL	21.10	9.20	10.68	21.90	25.00	12.90	9.90	16.20	11.30	25.90	10.70	5.77	15.05	
KG /DAY (NNOTFR)	GUIDELINE														
PH FIELD	ACTUAL	7.10	7.00	7.00	6.80	6.90	6.80	6.70	7.00	7.10	6.80	7.00	7.15	6.95	
(FWPH)	GUIDELINE														
RESIDUE FILTERED	ACTUAL	402.80	279.40	389.00	354.80	426.00	1026.20	357.00	365.00	570.10	472.60	348.30	215.50	**433.89**	
KG /DAY (RSF)	GUIDELINE														

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE, S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: E. B. Eddy Forest Products Ltd. INDUSTRIAL SECTOR: Pulp and Paper Mill
& PLANT LOCATION: Espanola

RECEIVING WATERBODY: DIRECT: Spanish River
INDIRECT: 47 km. to Lake Huron (North Channel)

DESCRIPTION OF ACTIVITY: Hardwood and softwood logs and chips are converted by the bleached kraft pulping process into pulp and paper.

EFFLUENT QUALITY: Contains suspended solids (bark, wood and paper) and dissolved organic compounds.

EFFLUENT TREATMENT: Two clarifiers on paper machine effluents; the total effluent is treated by settling basins, an aeration lagoon and a settling lagoons. Foul condensates are steam stripped to remove odourous organics. In-mill recovery systems remove bark fines and fibre in the wastewaters from pulp washing, paper machine and bleaching areas.

DISCHARGE TYPE: continuous at shore

COMMENTS:

The BOD limit (3630 kilograms per day) specified in the Control Order was met. The Total Suspended solids value is a guideline number.

A bioassay conducted in 1986 indicated that the effluent was not acutely lethal to fish.

IMIS NUMBER: 0000980003 SIC CODE(S): 271 MOE REGION: Northeast DISTRICT: Sudbury

21/07/87

000098-00-0(3) E.B.EDDY FOREST PRODUCTS LIMITED STATION R

REPORT DATE: 22 JUL 87

CONTROL POINT: 0100 DATA FOR 1986

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	97700	100100	103600	99800	114500	123700	124500	128000	137000	116000	102000	102100	112417	
M3 /DAV (FTFLOW)	GUIDELINE														
BOD 5 DAY	ACTUAL	2930	3370	3430	2430	1460	1820	1180	1200	1400	2900	2200	1900	2185	
KG /DAV (BOD5)	REQUIREMENT	3630	3630	3630	3630	3630	3630	3630	3630	3630	3630	3630	3630	3630	
PH	ACTUAL	7.2	7.3	7.2	7.3	7.2	7.1	7.1	6.1	7.1	7.2	7.2	7.1	7.09165	
(PH)	GUIDELINE														
RESIDUE PARTIC.	ACTUAL	5800	7010	7100	5000	2710	4000	2490	4600	5000	6700	5400	5900	5142.5	
KG /DAV (RSP)	GUIDELINE														

NOTE: PH LIMIT 5.5-9.5, 0* INDICATES INTAKE EXCEEDED DISCHARGE, S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: E.B. Eddy Forest Products Ltd. Ottawa

INDUSTRIAL SECTOR: Pulp and Paper Mill

RECEIVING WATERBODY: DIRECT: Ottawa River
INDIRECT: St. Lawrence River

DESCRIPTION OF ACTIVITY: Converts pulp into paper for writing and printing.

EFFLUENT QUALITY: Contains suspended solids (paper) and trace organics.

EFFLUENT TREATMENT: Three "Savealls", whitewater recycle systems and a clarifier remove solids.

DISCHARGE TYPE: Continuous through a diffuser.

COMMENTS:

Suspended solids (August, September and October) not in compliance. Three total suspended solids (TSS) exceedances due to low saleable production in each month and poor operating conditions on certain days of each month. However the TSS concentration in the effluent remained fairly constant on the days of poor operation. The Control Order specifies that E. B. Eddy cannot exceed 9 lbs of suspended solids discharged per ton of saleable product taken as a daily average.

A bioassay conducted in 1986 indicated that it would take, statistically, 51.0 % effluent to kill 50 % of the test fish within four days ofexposure.

In 1987 E.B. Eddy will test four (4) samples of incoming effluent and outgoing effluent for a forensic scan of pollutants, conventional pollutants and the 126 priority pollutants of the E.P.A (U.S.A) and toxicity. The sampling program will be managed by Beak Consultants of Mississauga and the results will be known by August, 1987.

IMIS NUMBER: 0000980201 SIC CODE: 271 MOE REGION: Southeast DISTRICT: Ottawa

03/06/87

000098-02-0(1) E B EDDY FOREST PRODUCTS LIMITED

REPORT DATE: 20 JUN 87

CONTROL POINT: 0100 DATA FOR 1986

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	6050	6370	7070	6740	7780	8950	9220	9360	9390	8460	9460	9970	8235	
M3 /DAY (FTFLOW)	GUIDELINE														
BOD 5 DAY	ACTUAL	940	1120	1170	850	890	1050	880	850	950	1100	1010	1230	1003	
KG /DAY (BOD5)	GUIDELINE	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200	1
RESIDUE PARTIC.	ACTUAL	4174	6115	6433	5189	5835	520	5439	6926	8357	7783	5676	6679	5761	
KG/D (RSP)	REQUIREMENT	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Eldorado Resources Ltd.
& PLANT LOCATION: Blind River

INDUSTRIAL SECTOR: Metal Mining, Smelting and Refining

RECEIVING WATERBODY: DIRECT: Mississagi R. mouth
INDIRECT: North Channel (Lake Huron)

DESCRIPTION OF ACTIVITY: Uranium refining using concentrated nitric acid solvent , extraction and evaporation/decomposition of the nitrate to the oxide by the addition of heat.

EFFLUENT QUALITY: Effluent contains, nitrates, uranium and phosphorus.

EFFLUENT TREATMENT: Holding ponds.

DISCHARGE TYPE: Batch

COMMENTS:

In compliance with AECB licence requirements.

IMIS NUMBER: 0000830308 SIC CODE: 295 MOE REGION: Northeast DISTRICT: Sault Ste. Marie

03/06/87

000082-03-0(8) ELDORADO RESOURCES LTD FUEL SERVICES
CONTROL POINT: 0100 DATA FOR 1986
FLOW/LOADING PARAMETERS

REPORT DATE: 25 JUN 87

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW M3 /DAY (FTFLOW)	ACTUAL	303.43	267.43	374.29	260.71	312.57	302.71	242.57	359.00	398.86	386.00	257.57	228.43	307.80	
	GUIDELINE														
NO3-N UNF.REAC KG/D AS N (NNO3UR)	ACTUAL	7.6	9.4	12.4	10.4	12.5	13.3	7.0	2.5	9.2	8.9	13.1	10.7	10.2	
	REQUIREMENT	303.4	267.4	374.3	260.7	312.6	302.7	242.6	359.0	398.9	386.0	257.6	228.4	307.8	
PHOSPHOR UNF.TOT. KG/D AS P (PPUT)	ACTUAL	0.15	0.21											0.20	
	GUIDELINE	0.30	0.27											0.31	
URANIUM UNF.TOT. KG/D AS U (UUUT)	ACTUAL	0.02	0.01	0.04	0.03	0.02	0.01	0.01	0.03	0.02	0.02	0.01	0.03	0.02	
	GUIDELINE	6.07	5.35	7.49	5.21	6.25	6.05	4.85	7.18	7.98	7.72	5.15	4.57	6.16	

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Eldorado Nuclear Ltd.
& PLANT LOCATION: Port Granby

INDUSTRIAL SECTOR: Metal Mining, Smelting, Refining

RECEIVING WATERBODY: DIRECT: Lake Ontario
INDIRECT:

DESCRIPTION OF ACTIVITY: Leachate is collected and chemically treated.

EFFLUENT QUALITY: Chemical precipitation

EFFLUENT TREATMENT: Leachate from site collected in two ponds. Leachate chemically treated for arsenic and radium removal. Precipitated arsenic and radium are settled out in ponds, and treated effluent is discharged to Lake Ontario together with offsite groundwater intercepted at periphery of site.

DISCHARGE TYPE: Batch Discharge

COMMENTS:

Arsenic in compliance. pH not in compliance for March and May. Decommissioning of the site plans are indefinite. Effluent quality limits are set in AECB operating licence.License limits compliance point changed effective July 1, 1985 to Interceptor effluent. Only Radium and Arsenic concentrations in license limits - no loading criteria. Other parameters are for treatment efficiency control only.

IMIS NUMBER: 0000820209 SIC CODE: 295 MOE REGION: Central DISTRICT: Peterborough

03/06/87

000082-02-0(9) ELDORADO NUCLEAR LIMITED (PORT GRANBY) PORT HOPE REPORT DATE: 24 JUL 87
CONTROL POINT: 0200 DATA FOR 1986

CONCENTRATION PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	196.5	0	0	228.3	218	105.7	163.5	178.4	245.3	238.1	206.7	0	148.4	
M3 /DAY (FTFLOW)	GUIDELINE														
ARSENIC UNF.TOT.	ACTUAL	0.17	0.31	0.24	0.29	0.57	0.29	0.43	0.15	0.51	0.48	0.57	1	0.4175	
MG/L AS AS	GUIDELINE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	4
RADIUM 226	ACTUAL	0.05	0.05	0.15	0.06	0.07	0.06	0.04	0.09	0.1	0.05	0.04	0.06	0.068333	
BQ/L AS RA	GUIDELINE	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	
URANIUM UNF.TOT.	ACTUAL	0.4	0.58	0.5	0.69	1.12	0.89	1.16	0.6	0.53	0.68	0.86	0.86	0.739165	
MG/L (UUUT)	GUIDELINE	3	3	3	3	3	3	3	3	3	3	3	3	3	

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE, S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Eldorado Nuclear Ltd.
& PLANT LOCATION: Port Hope

INDUSTRIAL SECTOR: Metal Mining, Smelting, Refining

RECEIVING WATERBODY: DIRECT: Lake Ontario
INDIRECT:

DESCRIPTION OF ACTIVITY: Uranium oxide (U03) is extracted from concentrates and converted into (UF6).

EFFLUENT QUALITY:

EFFLUENT TREATMENT:

DISCHARGE TYPE: Two discharge pipes at surface.

COMMENTS:

In compliance except for Fluorides in the month of June when a seal pot overflow mixing with the cooling water caused an exceedance. No flow measurements available - estimates only. Reported is the concentration of specific parameters from control point 02.

IMIS NUMBER: 0000820001 SIC CODE: 295 MOE REGION: Central DISTRICT: Peterborough

03/06/87

000082-00-0(1)
CONTROL POINT: 0200 DATA FOR 1986
CONCENTRATION PARAMETERS

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLUORIDE UNF.TOT.	ACTUAL	0.36	0.39	0.29	0.33	0.8	3.33	0.68	1.35	0.54	0.28	0.29	0.32	0.746665	
MG/L AS F (FFIDUT)	GUIDELINE	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1
NH3-N TOTAL	ACTUAL	0.23	0.16	0.29	0.15	0.13	0.1	0.1	0.1	0.1	0.1	0.35	0.1	0.159166	
MG/L AS N (NNHTUR)	GUIDELINE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
NO2+NO3N UNF.REAC	ACTUAL	2.9	3.3	3.8	4.9	2.1	2.58	1.85	1.98	2.16	2.33	2.3	3.08	2.77332	
MG/L AS N (NNOTUR)	GUIDELINE	25	25	25	25	25	25	25	25	25	25	25	25	25	
URANIUM UNF.TOT.	ACTUAL	0.13	0.1	0.11	0.11	0.06	0.07	0.03	0.05	0.04	0.03	0.07	0.07	0.0725	
UG/L (UUUT)	GUIDELINE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1985

COMPANY NAME & PLANT LOCATION: Eldorado Nuclear Ltd. Welcome Waste Site

INDUSTRIAL SECTOR: Metal Mining, Smelting, Refining

RECEIVING WATERBODY: DIRECT: Lake Ontario
INDIRECT:

DESCRIPTION OF ACTIVITY: Leachate is collected and chemically treated

EFFLUENT QUALITY: Chemical precipitation

EFFLUENT TREATMENT:

DISCHARGE TYPE: continuous submerged

COMMENTS:

Arsenic not in compliance. Decommissioning of the site is indefinite. Effluent quality limits are set in AECB operating licence. Collection ponds re-constructed in 1986 to improve arsenic treatment. Last half of 1986 results show improvement. Radium units are concentrations, not loadings.

IMIS NUMBER: 0000820100 SIC CODE: 295 MOE REGION: Central DISTRICT: Peterborough

03/06/87

000082-01-0(0) ELDORADO NUCLEAR LIMITED (WELCOME)
CONTROL POINT: 0100 DATA FOR 1986

REPORT DATE: 25 JUN 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW M3 /MON (FTFLOW)	ACTUAL REQUIREMENT	6690	5170	12000	7490	5680	3980	3570	2470	9440	13710	10490	11100	91790	
ARSENIC UNF.TOT. KG/D AS AS	ACTUAL GUIDELINE	0.097 0.108	0.054 0.093	0.344 0.194	0.116 0.125	0.069 0.092	0.062 0.067	0.068 0.056	0.092 0.04	0.49 0.158	0.164 0.221	0.028 0.175	0.014 0.179	0.10 0.12	4
PH (PH)	ACTUAL REQUIREMENT	7.16	7.27	7.6	7.64	7.54	7.72	7.76	7.81	7.63	7.7	7.72	7.62	7.60	
RADIUM 226 FIL. BQ/L (RA226F)	ACTUAL GUIDELINE	0.04 0.37	0.04 0.37	0.06 0.37	0.13 0.37	0.05 0.37	0.04 0.37	0.04 0.37	0.04 0.37	0.11 0.37	0.08 0.37	0.04 0.37	0.06 0.37	0.06 0.37	

NOTE: PH LIMIT 5.5-9.5, 0* INDICATES INTAKE EXCEEDED DISCHARGE, S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Esso Chemicals Canada Ltd. INDUSTRIAL SECTOR: Organic Chemicals, Synthetic Fibres
& PLANT LOCATION: Sarnia

RECEIVING WATERBODY: DIRECT: St. Clair River
INDIRECT:

DESCRIPTION OF PROCESS: Polymerizes ethylene produced from natural gas and feed from petroleum refinery to produce polyethylene. Polymerizes vinyl chloride monomer to produce polyvinyl chloride. Fractionates feed from refinery to produce benzene, toluene and xylene.

EFFLUENT QUALITY: Contains insoluble and soluble hydrocarbons.

EFFLUENT TREATMENT:

DISCHARGE TYPE: continuous through an extended outfall

COMMENTS:

In complinace.

A bioassay conducted in 1986 indicated that the effluent was not acutely lethal to fish.

IMIS NUMBER: 0000070201 SIC CODE: 369 MOE REGION: Southwest DISTRICT: Sarnia

22/07/87

000007-02-0(1) ESSO PETROLEUM CANADA DIVISION OF IMPERIAL O

REPORT DATE: 23 JUL 87

CONTROL POINT: 0200 DATA FOR 1986

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	25250.3	25850.4	26230.4	25243.9	25040.3	30550.5	33390.5	29400.4	31477.3	31820.8	28570.3	29080.4	28492.1	
M3 /DAY (FTFLOW)	GUIDELINE														
NH3-N TOTAL	ACTUAL	13.53	13.98	0.07	11.8	5.01	0	3.33	0	0	0	2.9	5.8	4.70	
KG /DAY (NNHTFR)	GUIDELINE	252.503	258.504	262.304	252.439	250.403	305.505	333.905	294.004	314.773	318.208	285.703	290.804	284.92	
PH	ACTUAL	7.3	7.2	7.2	7.4	7.3	7.3	7.3	7.4	7.2	7.3	7.2	7.2	7.275	
(PH)	GUIDELINE														
PHENOLS UNF-REAC	ACTUAL	0.04	0.05	0.06	0.04	0.05	0.06	0.19	0.11	0.03	0.02	0.01	0.03	0.06	
KG /DAY (PHNOL)	GUIDELINE	0.505006	0.517008	0.524609	0.504879	0.500805	0.611011	0.66781	0.588008	0.629545	0.636415	0.571406	0.581608	0.57	
RESIDUE FILTERED	ACTUAL	1139.8	1883.7	3133.7	1318	451.42	197.19	1118.56	678.7	698.86	519.81	1020.86	2872.9	1320.33	
KG /DAY (RSF)	GUIDELINE														
RESIDUE PARTIC.	ACTUAL	107.36	247.42	362.13	137.31	27.54	0	33.39	414.5	0	0	0	119.2	120.74	
KG /DAY (RSP)	GUIDELINE	378.755	387.756	393.457	378.659	375.604	458.258	500.858	441.006	472.159	477.312	428.555	436.206	427.38	
SOLVENT EXTRACT.	ACTUAL	18.18	21.04	5.76	7.87	2.5	12.22	13.35	2.94	15.74	0	5.71	11.63	9.74	
KG /DAY (SOLEXT)	GUIDELINE	252.503	258.504	262.304	252.439	250.403	305.505	333.905	294.004	314.773	318.208	285.703	290.804	284.92	
SULPHIDE UNF.REAC	ACTUAL	0	0	0	0	0	0	0	0	0	0	0	0	0	
KG /DAY (SSIDUR)	GUIDELINE														
CARBON TOTAL	ACTUAL	147.5	73.6	170	172.4	5.21	0	5.042	46.92	38.06	103.9	149.13	123.04	86.23	
KG /DAY (TOC)	GUIDELINE														

NOTE: PH LIMIT 5.5-9.5, 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Esso Petroleum Canada
& PLANT LOCATION: Sarnia

INDUSTRIAL SECTOR: Petroleum Refining

RECEIVING WATERBODY: DIRECT: St. Clair River
INDIRECT:

DESCRIPTION OF ACTIVITY: Crude oil is converted into a wide range of petroleum products.

EFFLUENT QUALITY: Contains insolube and soluble compounds from crude oil at the parts per billion range.

EFFLUENT TREATMENT: Once through cooling water receives gravity separation prior to discharge to the St. Clair River. Process and essentially all storm water receives both primary and secondary (biological) treatment before discharge. High strength wastewaters and effluent from the sour water stripper are biologically pretreated before discharge to the activated sludge process. Other wastewaters are filtered by sand and anthracite before discharge to the activated sludge process.

DISCHARGE TYPE: continuous through three outfalls

COMMENTS:

In compliance.

IMIS NUMBER: 0000070102 SIC CODE: 3651 3652 MOE REGION: Southwest DISTRICT: Sarnia

22/07/87

000007-01-0(2) ESSO PETROLEUM CANADA DIVISION OF IMPERIAL OIL LTD PO BOX 3004 SARNIA

S U M M A R Y FOR EMIS. TYPE: 16 FINAL DISCHARGE - NET DATA DISCHARGED INTO: 02/003/ LAKE ERIE

INCLUDES CONTROL POINTS: 0200 0300

DATA FOR 1986

REPORT DATE: 23 JUL 87

FLOW/LOADING	PARAMETERS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	208404	208204	209304	207904	208664	211084	211734	213264	213214	212954	209854	210424	210417	
M3 /DAY (FTFLOW)	GUIDELINE														
NH3-N TOTAL	ACTUAL	29.4	5.29	7.15	8.9	27.81	13.1479	42.35	0	14.64	4.13	5.26	10.9	14.08	
KG /DAY (NNHTFR)	GUIDELINE	2084.03	2082.03	2093.03	2079.03	2086.63	2110.83	2117.33	2132.63	2132.13	2129.53	2098.53	2104.23	2104.16	
PH	ACTUAL	7.45	7.5	7.55	7.6	7.55	7.5	7.5	7.6	7.6	7.7	7.5	7.35	7.53	
(PH)	GUIDELINE														
PHENOLS UNF-REAC	ACTUAL	0.294	0.226	0.236	0.169	0.43	0.09	0.2	0.172	0.129	0.2	0.13	0.23	0.21	
KG /DAY (PHNOL)	GUIDELINE	4.17	4.16	4.19	4.16	4.17	4.22	4.23	4.27	4.26	4.26	4.20	4.21	4.21	
RESIDUE FILTERED	ACTUAL	12024.6	9991.54	4850.57	9660.34	9986.5	7522.58	5715.44	6711.59	6144.39	9140	11713.5	7055.09	8376.33	
KG /DAY (RSF)	GUIDELINE														
RESIDUE PARTIC.	ACTUAL	1379.49	829.229	408.9	1222.3	256.8	97.66	104.9	0	0	0	0	442.129	395.12	
KG /DAY (RSP)	GUIDELINE	3126.05	3123.05	3139.55	3118.55	3129.95	3166.25	3176	3198.95	3198.2	3194.3	3147.8	3156.35	3156.25	
SOLVENT EXTRACT.	ACTUAL	139.869	66.26	49.31	453	54.82	15.02	21.37	8.38	46.41	48.78	35.03	23.56	80.15	
KG /DAY (SOLEXT)	GUIDELINE	2084.03	2082.03	2093.03	2079.03	2086.63	2110.83	2117.33	2132.63	2132.13	2129.53	2098.53	2104.23		
SULPHIDE UNF.REAC	ACTUAL	0	0	0	0	0	0	0	0	0	0	0	0	0	
KG /DAY (SSIDUR)	GUIDELINE														
CARBON TOTAL	ACTUAL	256	103.4	313.4	216.65	137.339	113.539	166.5	179.5	168.9	258.7	294.3	406.629	217.904	
KG /DAY (TOC)	GUIDELINE														

NOTE: PH LIMIT 5.5-9.5, 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Ethyl Canada Inc.
& PLANT LOCATION: Corunna

INDUSTRIAL SECTOR: Organic Chemicals, Synthetic Fibres

RECEIIING WATERBODY: DIRECT: St. Clair River
INDIRECT:

DESCRIPTION OF ACTIVITY: Tetraethyl lead is made from a lead-sodium alloy and ethyl chloride.

EFFLUENT QUALITY: Contains organic lead

EFFLUENT TREATMENT: Physical-chemical.

DISCHARGE TYPE: continuous through an extended outfall

COMMENTS:

In complinace.

IMIS NUMBER: 0000120006 SIC CODE: 374 MOE REGION: Southwest DISTRICT: Sarnia

22/07/87

000012-00-0(6) ETHYL CANADA INC
CONTROL POINT: 0100 DATA FOR 1986

REPORT DATE: 02 JUL 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	12108.6	11715.6	11405.4	13375.7	13661.9	17177.1	19977.3	20064.8	25467	31764	29400	25958	19339.6	
M3 /DAY (FTFLOW)	GUIDELINE														
LEAD UNF.TOT.	ACTUAL	7.7	5.76	6.01	9.41	9.1	6.04	4.45	4	10.7	17.2	10	14.4	8.73	
KG /DAY (PBUT)	GUIDELINE	12.1086	11.7156	11.4054	13.3757	13.6619	17.1771	19.9773	20.0648	25.467	31.764	29.4	25.958	19.34	

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Exolon
& PLANT LOCATION: Thorold

INDUSTRIAL SECTOR: Industrial Minerals

RECEIVING WATERBODY: DIRECT: 9.7 km from Beaverdams Pond to 12 Mile Creek
INDIRECT: Lake Ontario

DESCRIPTION OF ACTIVITY: Manufactures abrasive products

EFFLUENT QUALITY: Furnace cooling water.

EFFLUENT TREATMENT:

DISCHARGE TYPE: Continuous

COMMENTS:

Suspended Solids not in compliance. Influent/Effluent sampling program being developed.

IMIS NUMBER: 0001640002 SIC CODE: 357 MOE REGION: West Central DISTRICT: Welland

10/06/87

000164-00-0(2) EXOLON
CONTROL POINT: 0100 DATA FOR 1986

REPORT DATE: 25 JUN 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	13090	13100	13100	13100	13100					10900	10900	10900	12273.8	
M3 /DAY (FTFLOW)	GUIDELINE														
RESIDUE PARTIC.	ACTUAL	26.18	78.54	65.45	13.09	170.17					337		152	120.3	
KG /DAY (RSP)	GUIDELINE	196.35	196.5	196.5	196.5	196.5					163.5		163.5	184.1	1
SOLVENT EXTRACT.	ACTUAL	2.618				2.62								2.6	
KG /DAY (SOLEXT)	GUIDELINE	196.35				196.5								196.4	

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Falconbridge Ltd.
& PLANT LOCATION: Falconbridge,

INDUSTRIAL SECTOR: Metal Mining, Smelting, Refining

RECEIVING WATERBODY: DIRECT: Coniston Creek to Wanapitei River
INDIRECT: 80 km. to Lake Huron (Georgian Bay)

DESCRIPTION OF ACTIVITY: Converts ore into metallic matte.

EFFLUENT QUALITY: Contains dissolved nickel and copper sulphates.

EFFLUENT TREATMENT: Neutralization with Calcium Oxide (quicklime).

DISCHARGE TYPE: Continuous decant flow from main tailings area

COMMENTS:

Iron exceeds the guideline for January and February; nickel exceeded from January to March, December; total metals from January to June, December. In 1987 the company had submited an application for approval to install a tertiary treatment stage to reduce the metals content in the effluent.

IMIS NUMBER: 0001700004 SIC CODE(S): 0592 MOE REGION: Northeast DISTRICT: Sudbury

22/07/87

000170-00-0(4) FALCONBRIDGE LTD., FALCONBRIDGE

CONTROL POINT: 0300 DATA FOR 1986

REPORT DATE: 25 JUN 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	19090	18660	48780	74750	23660	23390	21930	18000	25970	14400	40370	16360	28780	
M3 /DAY (FTFLOW)	GUIDELINE														
COPPER UNF.TOT.	ACTUAL	0.38			5.2		0.47	0.22		1.04	0.72	1.2	0.49	1.215	
KG /DAY (CUUT)	GUIDELINE	19.09			74.75		23.39	21.93		25.97	14.4	40.37	16.36	28.78	
IRON UNF.TOT.	ACTUAL	21.8	19.8	48.3	47.8	16.8	14.7	13.6	5.6	4.9	2.74	8.1	8.5	17.72	
KG /DAY (FEUT)	GUIDELINE	19.09	18.66	48.78	74.75	23.66	23.39	21.93	18	25.97	14.4	40.37	16.36	28.78	2
NICKEL UNF.TOT.	ACTUAL	20	19.2	52.2	68	18.9	9.8	4.2	4.1	8.8	9.9	27.9	18.98	21.83	
KG /DAY (NIUT)	GUIDELINE	19.09	18.66	48.78	74.75	23.66	23.39	21.93	18	25.97	14.4	40.37	16.36	28.78	4
PH	ACTUAL	7	6.6	6.5	6.3	7.34	7.51	7.27	7.95	7.37	7.26	7.02	8.05	7.18	
(PH)	GUIDELINE														
RESIDUE PARTIC.	ACTUAL		123	263	822		164	193	57.6	62.3	2.88	88.8	55.64	183.221	
KG /DAY (RSP)	GUIDELINE		279.9	731.7	1121.25	354.9	350.85	328.95	270	389.55	216	605.55	245.4	431.7	
SULPHATE UNF.REAC	ACTUAL	8.591	8171	17610	15996	7523	8327	7367	7110	11010	8784	18369	7511	9815.54	
KG /DAY (SSO4UR)	GUIDELINE														

NOTE: PH LIMIT 5.5-10.6. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Falconbridge Ltd. Moose Lake Wastewater Treatment System

INDUSTRIAL SECTOR: Metal Mining, Smelting, Refining

RECEIVING WATERBODY: DIRECT: Moose Lk. to Onaping R. to Vermillion R. to Spanish R.
INDIRECT: 125 km. to Lake Huron (North Channel)

DESCRIPTION OF ACTIVITY: Extraction from ore into Nickel, Copper and Cobalt concentrates which are shipped to the smelter.

EFFLUENT QUALITY: Contains dissolved nickel and copper sulphates.

EFFLUENT TREATMENT: Neutralization with limestone slurry prior to discharge.

DISCHARGE TYPE: Continuous

COMMENTS:

Iron exceeded the guideline January to April.
The nickel limit, a yearly load, set by the Certificate of Approval at 21,447 kg/day was met; the actual yearly average was 18,854 kg/day.

IMIS NUMBER: 0001700301 SIC CODE(S): 0592 MOE REGION: Northeast DISTRICT: Sudbury

03/06/87

000170-03-0(1) FALCONBRIDGE LTD., MOOSE LK WWTS

REPORT DATE: 22 JUL 87

CONTROL POINT: 0200 DATA FOR 1986

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	19340	8270	15850	50280	25350	51180	25090	35780	14680	10020	31480	17260	25381.6	
M3 /DAY (FTFLOW)	GUIDELINE														
COPPER UNF.TOT.	ACTUAL	0.58	0.08	0.32			1.54	2.3	0.72		0.71	0.94	0.52	0.857	
KG /DAY (CUUT)	GUIDELINE	19.34	8.27	15.85			51.18	25.09	35.78		10.02	31.48	17.26	25.38	
IRON UNF.TOT.	ACTUAL	40.6	26.06	58.6	150.8	11.92	8.7	5.5	7.16	5.14	3.2	10.7	12.08	28.4	
KG /DAY (FEUT)	GUIDELINE	19.34	8.27	15.85	50.28	25.35	51.18	25.09	35.78	14.68	10.02	31.48	17.26	25.4	4
NICKEL UNF.TOT.	ACTUAL	34.61	14.68	27.33	86	46.1	106.46	47.4	67.9	31.26	20.8	76.34	44.27	50.3	
KG /DAY (NIUT)	REQUIREMENT	19.34	8.27	15.85	50.28	25.35	51.18	25.09	35.78	14.68	10.02	31.48	17.26	25.4	SC
PH	ACTUAL	6.46	6.43	6.45	6.38	6.88	6.84	7	7.15	7.13	6.93	6.7	6.62	6.7	
(PH)	GUIDELINE														
RESIDUE PARTIC.	ACTUAL	112	19.86	126.8	744	60.8	153.55	45	42.93		10	18.9	44.87	125.3	
KG /DAY (RSP)	GUIDELINE	290.1	124.05	237.75	754.2	380.25	767.7	376.35	536.7		150.3	472.2	258.9	380.7	
SULPHATE UNF.REAC	ACTUAL	12258	5444	10790	22777	10167	26155	13170	18174		5339	18886	10838	14000	
KG /DAY (SSO4UR)	GUIDELINE														

NOTE: PH LIMIT 5.5-10.6. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Falconbridge Ltd. - Onaping Mine, Onaping Falls

INDUSTRIAL SECTOR: Metal Mining, Smelting, Refining

RECEIVING WATERBODY: DIRECT: Onaping River to Vermillion River to Spanish River
INDIRECT: 125 km to Lake Huron (North Channel)

DESCRIPTION OF ACTIVITY: Ore is mined and separated into tailings and concentrates.

EFFLUENT QUALITY: Contains dissolved nickel and copper sulphates.

EFFLUENT TREATMENT: Neutralization with sodium hydroxide.

DISCHARGE TYPE: Intermittent (7 months) - mine water is decanted (overflow) after treatment.

COMMENTS:

Nickel exceeded the guideline value for April, October and November.
Total metals for June.
Suspended solids exceeded during January, April, June, August.
Changes were made to the mixing zone in the effluent system to improve treatment in the spring of 1987.

IMIS NUMBER: 0001700103 SIC CODE(S): 0592 MOE REGION: Northeast DISTRICT: Sudbury

21/07/87

000170-01-0(3) FALCONBRIDGE LTD., ONAPING MINE

REPORT DATE: 25 JUN 87

CONTROL POINT: 0100 DATA FOR 1986

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	311	360	785	1090	1050	820	458	884	327	347	374	393	599.916	
M3 /DAY (FTFLOW)	GUIDELINE														
COPPER UNF.TOT.	ACTUAL	0.006	0.004			0.06	0.06	0.005	0.026		0.02	0.007	0.01	0.022	
KG /DAY (CUUT)	GUIDELINE	0.311	0.36			1.05	0.82	0.458	0.884		0.347	0.374	0.393	0.600	
IRON UNF.TOT.	ACTUAL	0.07	0.02	0.016	0.58	0.2	0.24	0.11	0.17	0.04	0.03	0.09	0.03	0.133	
KG /DAY (FEUT)	GUIDELINE	0.311	0.36	0.785	1.09	1.05	0.82	0.458	0.884	0.327	0.347	0.374	0.393	0.600	
NICKEL UNF.TOT.	ACTUAL	0.08	0.14	0.49	4.1	0.57	0.41	0.44	0.75	0.11	0.41	0.4	0.15	0.671	
KG /DAY (NIUT)	GUIDELINE	0.311	0.36	0.785	1.09	1.05	0.82	0.458	0.884	0.327	0.347	0.374	0.393	0.600	3
PH	ACTUAL	10.2	9.88	9.1	7.82	8.61	8.63	8.7	8.25	9.17	7.98	7.84	8.77	8.729	
(PH)	GUIDELINE														
RESIDUE PARTIC.	ACTUAL	5.3	0.79	6	28.3	11.1	13.4	5.1	14.1		1.7	2.99	2.87	8.332	
KG /DAY (RSP)	GUIDELINE	4.665	5.4	11.775	16.35	15.75	12.3	6.87	13.26		5.205	5.61	5.895	9.371	4
SULPHATE UNF.REAC	ACTUAL	118	145	360	300	448	361	222	437		195	195	191	270.182	
KG /DAY (SSO4UR)	GUIDELINE														

NOTE: PH LIMIT 5.5-10.6. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Fiberglas Canada Inc. Sarnia

INDUSTRIAL SECTOR: Industrial Minerals

RECEIVING WATERBODY: DIRECT: Cole Drain
INDIRECT: St. Clair River

DESCRIPTION OF ACTIVITY: insulation is produced from silicate sands

EFFLUENT QUALITY: Contains trace processing agents such as phenols

EFFLUENT TREATMENT:

DISCHARGE TYPE: Continuous

COMMENTS:

In compliance.

IMIS NUMBER: SIC CODE: 3562 MOE REGION: Southwest DISTRICT: Sarnia

22/07/87

FIBERGLAS CANADA INC.
SARNIA

REPORT DATE: 23 JUL 87

DATA FOR 1986

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	7226	7585	7018	7195	6684	6686	6523	6375	5796	3421	5296	6379	6349	
M3 /DAY (FTFLOW)	GUIDELINE														
PH	ACTUAL	8.14	8.12	8.22	8.42	8.28	8.29	8.27	8.43	8.43	8.43	8.26	8.05	8.28	
(PH)	GUIDELINE														
PHENOLS UNF-REAC	ACTUAL	0.09	0.09	0.04	0.02	0.01	0.02	0.01	0.05	0.02	0.01	0.03	0.02	0.03	
KG /DAY (PHNOL)	GUIDELINE	0.14	0.15	0.14	0.14	0.13	0.13	0.13	0.13	0.12	0.07	0.11	0.13	0.13	

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Fleet Manufacturing Company Ltd. Gilmore Fort Erie

INDUSTRIAL SECTOR: Metals, Plastic Fabricating and Finishing

RECEIVING WATERBODY: DIRECT: Frenchmans Creek to Niagara River
INDIRECT:

DESCRIPTION OF ACTIVITY: Fabricator of aircraft parts

EFFLUENT QUALITY:

EFFLUENT TREATMENT: Wastewater treatment consists of pH adjustment and heavy metal removal to sanitary sewer.

DISCHARGE TYPE: continuous

COMMENTS:

Company not in compliance. Company connected process waste water to municipal sewer system in October 1986.

IMIS NUMBER: 0001570001 SIC CODE: 321 MOE REGION: West Central DISTRICT: Welland

10/06/87

000157-00-0(1) FLEET MFG COMPANY LTD FORT ERIE
S U M M A R Y FOR EMIS. TYPE: 04 FINAL DISCHARGE - GROSS DATA DISCHARGED INTO: 02/004/ LAKE ONTARIO
INCLUDES CONTROL POINTS: 0100 0200
DATA FOR 1986

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	1031	1071	1031	737.6	1030.8	1030.8	1030.8	1030.8	4350	1031	284.7	314.2	1161	
M3 /DAY (FTFLOW)	GUIDELINE														
BOD 5 DAY	ACTUAL	9.62	1.4	2.058	2.43	9	4.79				3.385			4.67	
KG /DAY (BOD5)	GUIDELINE	15.465	16.065	15.465	11.064	15.462	15.462				15.465			17.415	
CADMIUM UNF.TOT.	ACTUAL	0.02		0.003	0.004	0.001	0.007				0.0007	0.009	0.009	0.0047	
KG /DAY (CDUT)	GUIDELINE	0.0004		0.0004	0.0004	0.0004	0.0004				0.0004	0.0004	0.0004	0.0004	8
CHROMIUM UNF.TOT.	ACTUAL			0.152	0.163	0.248	0.098				0.0199			0.14	
KG /DAY (CRUT)	GUIDELINE			1.031	0.7376	1.0308	1.0308				1.031			1.161	
LEAD UNF.TOT.	ACTUAL		0.031	0.00474	0.002	0.005	0.009				0.0076	0.006	0.002	0.134	
KG /DAY (PBUT)	GUIDELINE														
PH	ACTUAL	7.77	7.78	7.55	7.45	7.3	7.45				7.35			7.52	
(PH)	GUIDELINE														
PHOSPHOR UNF.TOT.	ACTUAL	0.22	0.022	0.391	0.446	0.566	0.593				0.1206			0.34	
KG /DAY (PPUT)	GUIDELINE	1.031	1.071	1.031	0.7376	1.0308	1.0308				1.031			1.161	
RESIDUE PARTIC.	ACTUAL	17.68	27.8	19.24	6.64	5.31	6.562				12.442			13.67	
KG /DAY (RSP)	GUIDELINE	15.465	16.065	15.465	11.064	15.462	15.462				15.465			17.415	3

NOTE: PH LIMIT 5.5-9.5, 0* INDICATES INTAKE EXCEEDED DISCHARGE, S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Ford Motor Company
& PLANT LOCATION: Niagara Falls

INDUSTRIAL SECTOR: Industrial Minerals

RECEIVING WATERBODY: DIRECT: Welland River to Niagara River
INDIRECT:

DESCRIPTION OF ACTIVITY: Manufacturing automotive glass.

EFFLUENT QUALITY:

EFFLUENT TREATMENT: Conventional secondary sewage treatment plant and oil water separation.

DISCHARGE TYPE: continuous (treated sanitary and contact cooling water)

COMMENTS:

The company was out of compliance for phosphorus (1 month) and suspended solids (5 months). A water conservation program is in place.

IMIS NUMBER: 0000020503 SIC CODE: 325 MOE REGION: West Central DISTRICT: Welland

10/06/87

000002-05-0(3) FORD MOTOR COMPANY NIAGARA FALLS REPORT DATE: 11 AUG 87

S U M M A R Y FOR EMIS. TYPE: 04 FINAL DISCHARGE - GROSS DATA DISCHARGED INTO: 02/004/5400 WELLAND R.

INCLUDES CONTROL POINTS: 0300 0500

DATA FOR 1986

CONCENTRATION PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	8554	8554	8554	8554	8554	8554	8554	8554	8554	8554	8554	8554	8554	
M3 /DAY (FTFLOW)	GUIDELINE														
BOD 5 DAY	ACTUAL	12.0	34.2	40.2	28.2	29.9	44.5	48.8	29.9	89.0	43.6	106.9	64.2	47.6	
KG/D (BOD5)	GUIDELINE	128	128	128	128	128	128	128	128	128	128	128	128	128	
IRON UNF.TOT.	ACTUAL				0.599		0.428	1.283	0.428		0.428	0.813	0.941	0.703	
KG/D (FEUT)	GUIDELINE														
NH4-N FIL.REAC	ACTUAL	0.43	6.84	6.84	1.28	0.51	0.09	3.16	7.06	2.95	7.91	0.51	1.80	3.28	
KG/D (NNH4FR)	GUIDELINE	85.54	85.54	85.54	85.54	85.54	85.54	85.54	85.54	85.54	85.54	85.54	85.54	85.54	
KJELDAHL ORGANIC	ACTUAL	6.8	15.4	12.0			7.3	4.3	8.1		27.4	14.5	11.5	11.9	
KG/D (NNKFR)	GUIDELINE														
PH	ACTUAL				6.9	7.4	7.45	7.05	7.35	7.55	7.15	7.3	7.85	7.3	
(PH)	GUIDELINE														
PHOSPHOR UNF.TOT.	ACTUAL	6.2	9.2	6.8			2.6	0.9	0.9		0.9	0.9	0.9	3.2	
KG/D (PPUT)	GUIDELINE	8.5	8.5	8.5			8.5	8.5	8.5		8.5	8.5	8.5	8.5	1
RESIDUE PARTIC.	ACTUAL	76.1	199.3	113.8	286.6	102.6	196.7	124.0	102.6	149.7	94.1	81.3	213.9	145.1	
KG/D (RSP)	GUIDELINE	128	128	128	128	128	128	128	128	128	128	128	128	128	5
SOLVENT EXTRACT.	ACTUAL				28.2	9.0	12.8	42.8	29.9	17.5	21.4	34.2	21.4	24.1	
KG/D (SOLEXT)	GUIDELINE				128	128	128	128	128	128	128	128	128	128	

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: FORD Motor Company
& PLANT LOCATION: Oakville
RECEIVING WATERBODY: DIRECT: Lake Ontario
INDIRECT:

INDUSTRIAL SECTOR: Metal, Plastic Fabricating and Finishing

DESCRIPTION OF ACTIVITY: Automobile and truck assembly plant

EFFLUENT QUALITY:

EFFLUENT TREATMENT: Primary treatment with settling lagoon.

DISCHARGE TYPE: Continuous

COMMENTS:

On December 3, 1986, Halton Regional Council approved the discharge from Ford into the Regional sanitary sewer system. A completion date of May 31, 1988 is projected for the upgraded chemical pretreatment plant.

IMIS NO.: 0000020008 SIC CODE: 323 MOE REGION: Central DISTRICT: Halton-Peel

18/06/87

D00002-00-0(8) FORD MOTOR COMPANY OF CANADA LIMITED
CONTROL POINT: 0100 DATA FOR 1986
REPORT DATE: 16 SEP 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	12810	13168	12911	13677	14295	14336	14490	17705	15278	14626	13162	13226	14140.3	
M3 /DAY (FTFLOW)	GUIDELINE														
BOD 5 DAY	ACTUAL	615	254.6	33	559.4	667.8	655.2	393	388.7	570	548	346.6	408.9	453.3	
KG /DAY (BOD5)	GUIDELINE	192.15	197.52	193.665	205.155	214.425	215.04	217.35	265.575	229.17	219.39	197.43	198.39	212.1	11
CHROMIUM UNF.TOT.	ACTUAL	0.5	0.41	0.57	0.48	0.32	0.55	0.02	0.47	0.92	0.68	2.09	1.48	0.708	
KG /DAY (CRUT)	GUIDELINE	12.81	13.168	12.911	13.677	14.295	14.336	14.49	17.705	15.278	14.626	13.162	13.226	14.14	
PH	ACTUAL	7.8	7.2	7.3	7.4	7.1	7.2	7.7	7.6	7.1	7.1	7.2	7.1	7.32	
(PH)	GUIDELINE														
PHENOLS UNF-REAC	ACTUAL	0.27	0.17	0.52	0.42	1	0.35	0.26	0.42	0.63	0.68	0.4	0.3	0.452	
KG /DAY (PHNOL)	GUIDELINE	0.2562	0.26336	0.25822	0.27354	0.2859	0.28672	0.2898	0.3541	0.30556	0.29252	0.26324	0.26452	0.283	10
PHOSPHOR UNF.TOT.	ACTUAL	5	3.3	6.9	7.6	4.6	8.3	9.2	16.7	10.8	13.5	15.8	12.6	9.52	
KG /DAY (PPUT)	GUIDELINE	12.81	13.168	12.911	13.677	14.295	14.336	14.49	17.705	15.278	14.626	13.162	13.226	14.14	1
RESIDUE PARTIC.	ACTUAL	278.7	16	244.8	328.3	494	349.3	338.1	673.6	388	309.4	308.8	337	338.8	
KG /DAY (RSP)	GUIDELINE	192.15	197.52	193.665	205.155	214.425	215.04	217.35	265.575	229.17	219.39	197.4	198.4	212.1	11
SOLVENT EXTRACT.	ACTUAL	83.5	38.9	0.6	25.7	37.9	6.5	20.2	12.3	5.9	11	1.4	0.2	20.3	
KG /DAY (SOLEXT)	GUIDELINE	192.2	197.5	193.7	205.2	214.4	215.0	217.4	265.6	229.2	219.4	197.4	198.4	212.1	

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Ford Motor Company Ltd.
Assembly Plant
St. Thomas

INDUSTRIAL SECTOR: Metal, Plastic Fabricating and Finishing

RECEIVING WATERBODY: DIRECT: Dodd Creek to Kettle Creek
INDIRECT: 38 Km to Lake Erie

DESCRIPTION OF ACTIVITY: Auto painting and assembly.

EFFLUENT QUALITY:

EFFLUENT TREATMENT: Domestic - Aerated activated sludge plant Industrial - Chemical batch followed by biological treatment and rapid sand filtration.

DISCHARGE TYPE: Intermittent through an on-shore outfall; weekend flow and pollutants drop off.

COMMENTS:

Company began reporting Ammonia in February 1986 - No January data. Company discontinued reporting Total Solids February 1987. Company has a consultant studing the phosphorus discharge problems.

IMIS NUMBER: 0000020404 SIC CODE: 323 MOE REGION: Southwest DISTRICT: London

28/07/87

000002-04-0(4) FORD MOTOR COMPANY OF CANADA LIMITED
CONTROL POINT: 0100 DATA FOR 1986
REPORT DATE: 28 JUL 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	5315	5080	5199	5375	6302	5696.5	5339.68	5962.08	5830.7	5935.7	5732	5329.3	5591.41	
M3 /DAY (FTFLOW)	GUIDELINE	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	12
BOD 5 DAY	ACTUAL	41.46	11.18	25	19.35	17.6	8.54	14.4	18.5	22.6	13.65	22.4	16	19.22	
KG /DAY (BOD5)	REQUIREMENT	53.15	50.8	51.99	53.75	63.02	56.965	53.3968	59.6208	58.307	59.357	57.32	53.293	55.9141	
CHEM. OX DEMAND	ACTUAL	197.7	329	248	403	30#	232	119	186	166	142	246	235	233.98	
KG /DAY (COD)	REQUIREMENT	531.5	508	519.9	537.5	630.2	569.65	533.968	596.208	583.07	593.57	573.2	532.93	559.14	
CHROMIUM UNF.TOT.	ACTUAL	0.27	0.406	0.3	<.268	0.25	<.28	<.26	<.30	0.31	<.29	<.29	<.27		
KG /DAY (CRUT)	REQUIREMENT	1.063	1.016	1.0398	1.075	1.2604	1.1393	1.067936	1.192416	1.16614	1.18714	1.1464	1.06586	1.12	
NH3-N TOTAL	ACTUAL	-	0.086	0.156	0.215	0.25	0.142	<.107	0.059	<.117	0.08	0.16	<.053		
KG /DAY (NNHTUR)	GUIDELINE		25.4	26.0	26.9	31.5	28.5	26.7	29.8	29.2	29.7	28.7	26.6		
PH	ACTUAL	7.3	7.4	7.3	7.8	7.75	7.5	7.8	7.4	7.7	7.5	7.6	7.4	7.54	
(PH)	REQUIREMENT														
PO4 FIL.REAC	ACTUAL	8.34	6.2	6.2	5.69	11.3	9.1	6.35	11.33	7.23	10.78	12.78	7.46	8.56	
KG /DAY (PPO4FR)	REQUIREMENT	5.315	5.08	5.199	5.375	6.302	5.6965	5.33968	5.96208	5.8307	5.9357	5.732	5.3293	5.59	12
RESIDUE PARTIC.	ACTUAL	40.4	17.3	38.7	51.6	0.252	20.5	58.9	28	183	34.4	48.1	7.46	44.88	
KG /DAY (RSP)	REQUIREMENT	79.725	76.2	77.985	80.625	94.53	85.4475	80.0952	89.4312	87.4605	89.0355	85.98	79.9395	83.87	1
RESIDUE TOTAL	ACTUAL	2179			2166	3433	3358	1260	3171	1784	1810	2436	2369	1997	
KG /DAY (RST)	GUIDELINE														
ZINC UNF.TOT.	ACTUAL	0.468	1.52	0.93	0.785	0.756	0.399	0.32	0.83	0.47	0.415	0.88	0.59	0.70	
KG /DAY (ZNUT)	REQUIREMENT	0.3189	0.3048	0.31194	0.3225	0.37812	0.34179	0.320380	0.357724	0.349842	0.356142	0.34392	0.319758	0.34	11

NOTE: PH LIMIT 6.5-8.5, 0* INDICATES INTAKE EXCEEDED DISCHARGE, S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME:: Ford Motor Co. of Canada Ltd.
& PLANT LOCATION: Windsor

INDUSTRIAL SECTOR: Metal, Plastic Fabricating and Finishing

RECEIVING WATERBODY: DIRECT: Detroit River
INDIRECT: Lake Erie

DESCRIPTION OF ACTIVITY: Engine block and parts are cast in the iron foundry; parts are machined and assembled into engines and transmissions.

EFFLUENT QUALITY: Contains iron, phenol and suspended solids.

EFFLUENT TREATMENT: Chemical coagulation, oil removal and sedimentation.

DISCHARGE TYPE: continuous six days a week through a submerged outfall

COMMENTS:

Phenols and Suspended Solids not in compliance. A Certificate of Approval has been issued for construction of improvements to the suspended solids removal system. Completion of this project is anticipated in 1987. The investigation of the cause and possible solutions to the Phenolics problem continues.

IMIS NUMBER: 0000020107 SIC CODE: 294, 325 MOE REGION: Southwest DISTRICT: Windsor

000002-01-0(7) FORD MOTOR COMPANY OF CANADA, LIMITED WINDSOR REPORT DATE: 28 JUL 87
CONTROL POINT: 0100 DATA FOR 1986

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	87624	87546	85661	90060	13.5	90898	71673	94917	97770	93594	88115	80660	87920	
M3 /DAY (FTFLOW)	GUIDELINE														
CHEM. OX DEMAND	ACTUAL	2629	2504	2240	2819	4611	2818	1390	3474	2244	3650	2256	1500	2785	
KG /DAY (COD)	GUIDELINE														
IRON UNF.TOT.	ACTUAL						134	151	112	186	174	194	144	156	
KG /DAY (FEUT)	REQUIREMENT						1545	1218	1614	1662	1591	1498	1371	1495	
FLUORIDE UNF.TOT.	ACTUAL						558	307	578	599	686	555	648	562	
KG /DAY (FFIDUT)	REQUIREMENT														
PHENOLS UNF-REAC	ACTUAL	31	31	27	29		9	3	5	8	15	32	33	19	
KG /DAY (PHNOL)	GUIDELINE	1.8	1.8	1.7	1.8	0.0	1.8	1.4	1.9	2.0	1.9	1.8	1.6	1.8	11
RESIDUE PARTIC.	ACTUAL	3251	3747	3919	5250	4611	6136	4859	6317	13434	9519	8935	6785	6397	
KG /DAY (RSP)	GUIDELINE	1314	1313	1285	1351	0	1363	1075	1424	1467	1404	1322	1210	1319	12
RESIDUE TOTAL	ACTUAL	2307*	23699	22396	25568	21115	23035	18872	23297	30710	28162	27844	25351	24426	
KG /DAY (RST)	GUIDELINE														
SOLVENT EXTRACT.	ACTUAL	1288	1655	1709	1801	1774	745	387	1419	444	453	502	382	1047	
KG/DAY (SOLEXT)	REQUIREMENT	1314	1313	1285	1351	1298	1363	1075	1424	1467	1404	1322	1210	1319	4

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Fraser Inc.
& PLANT LOCATION: Thorold

INDUSTRIAL SECTOR: Pulp and Paper Mill

RECEIVING WATERBODY: DIRECT: Twelve Mile Creek
INDIRECT: 12 km to Lake Ontario

DESCRIPTION OF ACTIVITY: Fine paper is made from pulp and from deinked ledger paper.

EFFLUENT QUALITY:

EFFLUENT TREATMENT: Activated sludge plant on deinking effluent removes exotic ink organics by biological degradation. Clarifier on total mill effluent removes solids. Some clarified effluent is recycled to the mill.

DISCHARGE TYPE: continuous through an outfall

COMMENTS:

Target loads set by Pulp and Paper Committee consistent with Best Practicable Technology. The effluent did not meet the Biochemical Oxygen Demand criterion. Process upsets (spills) resulted in non-compliance. Contingencies for spills being implemented. Company is in compliance in early 1987.

This mill's discharge is toxic to fish. Three bioassays conducted in 1986, indicated that it would take, statistically, 14.1 %, 46.1 % and 20.7 % effluent to kill 50 % of the test fish by the end of the four day exposure.

IMIS NUMBER: 0000940007 SIC CODE: 271 MOE REGION: West Central DISTRICT: Welland

10/06/87

000094-00-0(7) FRASER INCORPORATED

REPORT DATE: 25 JUN 87

CONTROL POINT: 0100 DATA FOR 1986

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	25090	27690	25330	26510	30830	28470	26300	26470	27740	26180	25000	27390	26916.6	
M3 /DAY (FTFLOW)	GUIDELINE														
BOD 5 DAY	ACTUAL	1480	1606	1621	1431	2620	2221	2052	2383	2080	1885	1550	1452	1865.08	
KG /DAY (BOD5)	REQUIREMENT	1810	1810	1810	1810	1810	1810	1810	1810	1810	1810	1810	1810	1810	6
RESIDUE FILTERED	ACTUAL	11139.96	11408.28	12259.72	14103.32	16494.05	14263.47	15543.3	16199.64	15423.44	13377.98	11925	15749.25	13974.18	
KG/D (RSF)	GUIDELINE														

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

CONTROL POINT: 0200 DATA FOR 1986

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
RESIDUE FILTERED	ACTUAL	6173	5676	6409	9278	10760	9196	10600	11230	10570	8665	7051	9859	8788.91	
KG /DAY (RSF)	GUIDELINE														
RESIDUE PARTIC.	ACTUAL	828	1274	1140	1272	1079	1053	789	2515	527	367	200	575	968.25	
KG /DAY (RSP)	REQUIREMENT	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Gay Lee Foods Co-op Ltd. Teeswater

INDUSTRIAL SECTOR: Food and Beverage

RECEIVING WATERBODY: DIRECT: Teeswater R.
INDIRECT: Lake Huron

DESCRIPTION OF ACTIVITY: Milk is made into butter and/or dried.

EFFLUENT QUALITY: Contains organic compounds such as proteins, sugars etc.

EFFLUENT TREATMENT: Secondary

DISCHARGE TYPE: Continuous

COMMENTS:

In compliance.

IMIS NUMBER: 0001000009 SIC CODE: 104 MOE REGION: Southwest DISTRICT: Owen Sound

000100-00-0(9) GAV LEE FOODS COOPERATIVE LIMITED
CONTROL POINT: 0100 DATA FOR 1986

REPORT DATE: 25 JUN 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	6.475								24.5	24.5			18.49	
M3 /DAY (FTFLOW)	GUIDELINE	80								80	80			80.00	
BOD 5 DAY	ACTUAL	0.06		0.4278	1.032	1.247	0.777	0.865	0.856	0.245	3.6			1.01	
KG /DAY (BOD5)	REQUIREMENT	5.45		5.45	5.45	5.45	5.45	5.45	5.45	5.45	5.45			5.45	
PH	ACTUAL	7.7	7.6	7.53	7.478	7.58	7.5	7.256	7.256	7.34	7.608			7.48	
(PH)	GUIDELINE														
RESIDUE PARTIC.	ACTUAL	0.051	2	0.636	1.109	0.903	0.797		2.02	0.127	0.2284			0.87	
KG /DAY (RSP)	REQUIREMENT	5.45	5.45	5.45	5.45	5.45	5.45		5.45	5.45	5.45			5.45	

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: General Chemical Canada Ltd (formerly: Allied Chemical Canada Inc.) Amherstburg.

INDUSTRIAL SECTOR: Inorganic Chemicals

RECEIVING WATERBODY: DIRECT: Detroit River
INDIRECT: Lake Erie

DESCRIPTION OF ACTIVITY: Soda ash (sodium carbonate) is made from table salt (sodium chloride).

EFFLUENT QUALITY: Contains inorganic salts (chlorides, carbonates).

EFFLUENT TREATMENT: By-product recovery and sedimentation.

DISCHARGE TYPE: continuous

COMMENTS:

In compliance except for slight excedances of the Fluoride requirement in February and October and of the Suspended Solids guidelines in August and September. Improved operations are required. Efforts to further reduce the pH could result in an increase in suspended solids loadings.

IMIS NUMBER: 0000010009 SIC CODE: 378 3782 MOE REGION: Southwest DISTRICT: Windsor

000001-00-0(9) GENERAL CHEMICAL CANADA INC. AMHERSTBURG REPORT DATE: 28 JUL 87
CONTROL POINT: 0100 DATA FOR 1986

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	16364	17635	19088	13789	17426	15228	14895	14124	15053	18105	12414	8741	15238.5	
M3 /DAY (FTFLOW)	GUIDELINE														
CHLORIDE UNF.REAC	ACTUAL	780000	787000	813000	644000	785000	587000	634000	739000	880000	783000	631000	358000	701750	
KG /DAY (CLIDUR)	GUIDELINE														
FLUORIDE UNF.TOT.	ACTUAL	47.7	74.7	60.9	40.7	51.6	42.3	44	36.6	67	76	34.8	26	50	
KG /DAY (FFIDUT)	REQUIREMENT	68	68	68	68	68	68	68	68	68	68	68	68	68	2
NH3-N TOTAL	ACTUAL	225	231	319	219	179	115	137	99	176	222	271	254	205	
KG /DAY (NNHTUR)	GUIDELINE														
RESIDUE PARTIC.	ACTUAL	90	86	209	116	150	182	196	215	237	189	122	99	158	
KG /DAY (RSP)	REQUIREMENT	245	265	286	207	261	228	223	212	226	272	186	131	229	2
RESIDUE TOTAL	ACTUAL	1314000	1310000	1377000	1117000	1408000	1030000	1089000	1249000	1555000	1325000	1078000	602000	1259000	
KG /DAY (RST)	GUIDELINE														

NOTE: PH LIMIT 5.5-12. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

000001-00-0(9) GENERAL CHEMICAL CANADA INC. AMHERSTBURG REPORT DATE: 28 JUL 87
CONTROL POINT: 0200 DATA FOR 1986

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	113163	130123	127579	127598	132247	151029	162840	145366	135890	128962	122899		134336	
M3 /DAY (FTFLOW)	GUIDELINE														
CHLORIDE UNF.REAC	ACTUAL	15400	13700	12100	10800	9000	7600	7000	8000	6000	7000	7900		9500	
KG /DAY (CLIDUR)	REQUIREMENT	45265.2	52049.2	51031.6	51039.2	52898.8	60411.6	65136	58146.4	54356	51584.8	49159.6		53734.3	
RESIDUE PARTIC.	ACTUAL	950	950	1254	928	528	560	1141	551	1338	1405	747		941.091	
KG /DAY (RSP)	REQUIREMENT	3394.89	3903.69	3827.37	3827.94	3967.41	4530.87	4885.2	4360.98	4076.7	3868.86	3686.97		4030.07	
RESIDUE TOTAL	ACTUAL	31700	30400	25900	24700	18000	21500	34200	32300	20000	18000	16500		24836.3	
KG /DAY (RST)	REQUIREMENT	90530.4	104099	102063	102079	105798	120823	130272	116293	108712	103170	98319.2		107469	

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: General Motors of Canada Ltd. St. Catharines

INDUSTRIAL SECTOR: Metal, Plastic Fabricating and Finishing

RECEIVING WATERBODY: DIRECT: Welland Canal
INDIRECT: 9.2 km to Lake Ontario

DESCRIPTION OF ACTIVITY: Coke and iron (pigs and scrap) are charged to a cupola to be processed into iron and cast as engine parts.

EFFLUENT QUALITY:

EFFLUENT TREATMENT:

DISCHARGE TYPE: continuous for five days a week through an outfall

COMMENTS:

Phenols and Suspended Solids not in compliance. Section 24 OWRA application submitted.

IMIS NUMBER: 0001630003 SIC CODE: 323 MOE REGION: West Central DISTRICT: Welland

10/06/87

000163-00-0(3) GENERAL MOTORS OF CANADA LTD.
CONTROL POINT: 0100 DATA FOR 1986

REPORT DATE: 25 JUN 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	126100	125400	132400	134900	140900	141700	118700	95010	139400	135500	130700	129300	129168	
M3 /DAY (FTFLOW)	GUIDELINE														
BOD 5 DAY	ACTUAL	138.7	47.012	135.71	118.7	73.989	287.688	197.095	114.007	295.505	335.273	101.263	74.334	159.9	
KG /DAY (BOD5)	GUIDELINE	1891.5	1881	1986	2023.5	2113.5	2125.5	1780.5	1425.15	2091	2032.5	1960.5	1939.5	1937.5	
NH3-N TOTAL	ACTUAL				21.849	76.807	52.436	27.546	22.564	57.15	62.72	56.838	51.064	47.7	
KG /DAY (NNHTFR)	GUIDELINE														
K'DAHL N TOTAL	ACTUAL	44.14	9.402	0	0	45.803	7.086	35.62	26.123		233.675	10.453	67.87	43.7	
KG /DAY (NNTKFR)	GUIDELINE														
PHENOLS UNF-REAC	ACTUAL	36.573	32.595	0	0.782	0							15.998	14.3	
KG /DAY (PHNOL)	GUIDELINE	2.522	2.508	2.648	2.698	2.818							2.586	2.58	3
PHOSPHOR UNF.TOT.	ACTUAL	0	43.878	56.27	0	0	35.43	0	0		0	0	0	12.3	
KG /DAY (PPUT)	GUIDELINE	126.1	125.4	132.4	134.9	140.9	141.7	118.7	95.01		135.5	130.7	129.3	128.2	
RESIDUE FILTERED	ACTUAL	8039.83	7835	8175.7	1888.16	2113.96	8113.35	2802.07	213.764	0	1015.98	32.666	3102.62	3611	
KG /DAY (RSF)	GUIDELINE														
RESIDUE PARTIC.	ACTUAL	1008.92	3134.15	1324	2913.17	3910.83	2550.92	1306.05	1971.38	195.145	0	0	0	1526.2	
KG /DAY (RSP)	GUIDELINE	1891.5	1881	1986	2023.5	2113.5	2125.5	1780.5	1425.15	2091	2032.5	1960.5	1939.5	1937.5	5
SOLVENT EXTRACT.	ACTUAL	40.988	125.366	26.48	48.553	49.326	14.172	330.075	47.503	39.029	0	0	0	60.1	
KG /DAY (SOLEXT)	GUIDELINE	1891.5	1881	1986	2023.5	2113.5	2125.5	1780.5	1425.15	2091	2032.5	1960.5	1939.5	1937.5	

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: GNB Batteries Canada Inc. INDUSTRIAL SECTOR: Metal, Plastic Fabricating and Finishing
Gould Manufacturing of Canada Ltd.
Fort Erie

RECEIVING WATERBODY: DIRECT: Frenchman's Creek to Niagara River
INDIRECT:

DESCRIPTION OF ACTIVITY: Lead is melted and cast into batteries.

EFFLUENT QUALITY: Tertiary treatment with heavy metal removal and pH adjustment.

EFFLUENT TREATMENT:

DISCHARGE TYPE: continuous for five days through an open outfall

COMMENTS:

Not in compliance for lead, suspended solids and pH. All process wastewater to be discharged to municipal sewer in February 1987.

IMIS NUMBER: 0001580000 SIC CODE: 3391 MOE REGION: West Central DISTRICT: Welland

10/06/87

000158-00-0(0) GNB BATTERIES CANADA INC
CONTROL POINT: 0100 DATA FOR 1986

REPORT DATE: 25 JUN 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	118.3	118.3	118.3	118.3	118.3	118.3	118.3	118.3	118.3	118.3	118.3	118.3	118.3	
M3 /DAV (FTFLOW)	GUIDELINE														
BOD 5 DAY	ACTUAL		1.42	2.48	1.04	3.3	1.14	0.12	0.87	0.55	1.12	1.51	0.47	1.27	
KG /DAV (BOD5)	GUIDELINE		1.7745	1.7745	1.7745	1.7745	1.7745	1.7745	1.7745	1.7745	1.7745	1.7745	1.7745	1.77	2
LEAD FIL.TOT.	ACTUAL											0.17	0.03	0.10	
KG /DAV (PBFT)	GUIDELINE														
LEAD UNF.TOT.	ACTUAL	0.17	0.18	0.33	0.32	0.31	0.2	0.25	0.16	0.19	0.17	0.43	0.22	0.24	
KG /DAV (PBUT)	GUIDELINE	0.1183	0.1183	0.1183	0.1183	0.1183	0.1183	0.1183	0.1183	0.1183	0.1183	0.1183	0.1183	0.09	12
PH	ACTUAL			7.625	7.5	7	7.3	7.6	7.3	8	7.5		7	7.43	
(PH)	GUIDELINE														
RESIDUE PARTIC.	ACTUAL	2.72	7.2	2.48	3.5	3.3	1.14	3.3	31	4.49	1.71	2.43	1.57	5.40	
KG /DAV (RSP)	GUIDELINE	1.7745	1.7745	1.7745	1.7745	1.7745	1.7745	1.7745	1.7745	1.7745	1.7745	1.7745	1.7745	1.77	9

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Great Lakes Forest Products Ltd. Dryden Division, Dryden

INDUSTRIAL SECTOR: Pulp and Paper Mill

RECEIVING WATERBODY: DIRECT: Wabigoon River
INDIRECT:

DESCRIPTION OF ACTIVITY: Kraft bleached pulp and fine papers uncoated are made from softwoods (jack pine, black spruce).

EFFLUENT QUALITY: Contains suspended solids (bark, wood and paper fines etc.) and chemicals from pulping and bleaching liquors (chlorinated compounds).

EFFLUENT TREATMENT: No solids from dry woodroom (debarking). Use of a continuous digester and enclosed diffusion washers results in few spills with much less solids and dissolved organics in wastewaters from the processes. Foul condensates are steam stripped to remove odourous organic compounds. Total effluent is treated by a clarifier prior to biological treatment (aeration lagoon), settling lagoons and a foam barrier.

DISCHARGE TYPE: Continuous through a submerged diffuser.

COMMENTS:

There were no exceedances of BOD and phosphorus guidelines or the total suspended solids requirement.

This mill's discharge is normally toxic to fish. Four bioassays conducted in 1986, indicated that, statistically, the percentage effluent required to kill 50 % of the test fish by the end of four days exposure ranged from 10% to 56.8%.

IMIS NUMBER: 0000840108 SIC CODE: 271 MOE REGION: Northwest DISTRICT: Kenora

25/08/87

000084-01-0(8) GREAT LAKES FOREST PRODUCTS DRYDEN DIVISION

REPORT DATE: 05 AUG 87

CONTROL POINT: 0100 DATA FOR 1986

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	61000	69000	73000	76000	76000	79000	81000	87000	82000	77000	68000	70000	74916.6	
M3 /DAY (FTFLOW)	GUIDELINE														
BOD 5 DAY	ACTUAL	2300	2500	2500	2400	2400	2600	2600	4100	3000	2600	2400	2300	2641.66	
KG /DAY (BOD5)	GUIDELINE														
PHOSPHOR UNF.TOT.	ACTUAL	0	0	0	0	0	0	0	0	0	0	0	0	0	
KG /DAY (PPUT)	GUIDELINE	61	69	73	76	76	79	81	87	82	77	68	70	74.9166	
RESIDUE PARTIC.	ACTUAL	1800	3700	2600	3400	4200	3800	3600	4100	2500	3100	3100	4000	3325	
KG /DAY (RSP)	REQUIREMENT	5600	5600	5600	5600	5600	5600	5600	5600	5600	5600	5600	5600	5600	

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Great Lakes Forest Products Ltd. Thunder Bay

INDUSTRIAL SECTOR: Pulp and Paper Mill

RECEIVING WATERBODY: DIRECT: Kaministiquia River
INDIRECT: 9 km to Lake Superior (Thunder Bay)

DESCRIPTION OF ACTIVITY: Newsprint and kraft pulp are made from logs and chips, mainly softwoods (Black spruce, Jack pine Balsam fir etc.) and some Poplar, by the kraft, stone groundwood and sulphite pulping processes. The kraft pulp is bleached. Crude tall oil is recovered and sold.

EFFLUENT QUALITY: Contains suspended solids (bark and wood fibre etc.) and chemicals from pulping and bleaching liquors (chlorinated compounds).

EFFLUENT TREATMENT: Several clarifiers in the newsmill, the kraft mills and neutral fiber kraft (clarification with pH adjustment). Bisulphite liquor cross recovery. Modern closed cycle process in "B" kraft Mill. Sour condensates are treated in-mill by steam stripping.

DISCHARGE TYPE: Continuous through a submerged diffuser with a separate clean cooling water discharge.

COMMENTS:

Suspended Solids (April and May) not in compliance.
Two TSS exceedances due to large amounts of Suspended Solids in raw water. The Control Order for this company is being amended. The final clause requires a report on what further works can be implemented to ensure Provincial Water Quality Requirements are met in the Kaministiquia River. Due to the high river flows, the survey of the river could not be completed in 1985 but has been completed in 1986.

This mill's discharge is normally toxic to fish. Ten bioassays conducted in 1986, indicated that, statistically the percentage combined final effluent required to kill 50 % of the test fish by the end of the four days exposure ranged from 22.6% to 45.6%.

IMIS NUMBER: 0000840009 SIC CODE(S): 271 MOE REGION: Northwest DISTRICT: Thunder Bay

25/08/87

000084-00-0(9) GREAT LAKES FOREST PRODUCTS LIMITED THUNDER — REPORT DATE: 05 AUG 87

CONTROL POINT: 0100 DATA FOR 1986

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	200000	170000	170000	200000	250000	240000	250000	250000	230000	230000	200000	200000	215833	
M3 /DAY (FTFLOW)	REQUIREMENT														
BOD 5 DAY	ACTUAL	48000	42000	39000	45000	45000	40000	44000	42000	44000	42000	42000	44000	43083.3	
KG /DAY (BOD5)	REQUIREMENT	77700	77700	77700	77700	77700	77700	77700	77700	77700	77700	77700	77700	77700	
PHOSPHOR UNF.TOT.	ACTUAL	118	114	119	165.6	102.4	118.62	136.38	149.36	124.92	147.07	125.2	153.75	131.191	
KG /DAY (PPUT)	GUIDELINE	200	170	170	200	250	240	250	250	230	230	200	200	215.833	
RESIDUE PARTIC.	ACTUAL	11000	11000	12000	21000	17000	12000	14000	12000	14000	140[illegible]	14000	12000	13666.6	
KG /DAY (RSP)	REQUIREMENT	14000	14000	14000	14000	14000	14000	14000	14000	14000	14000	14000	14000	14000	2

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: H. J. Heinz Company of Canada Ltd. INDUSTRIAL SECTOR: Food and Beverage
Leamington

RECEIVING WATERBODY: DIRECT: Selkirk Drain
INDIRECT: 1.3 km to Lake Erie

DESCRIPTION OF ACTIVITY: A wide variety of food products are made from produce grown locally.

EFFLUENT QUALITY: Contains vegetable processing waste (BOD and suspended solids).

EFFLUENT TREATMENT: Biological treatment system (activated sludge plus trickling filter).

DISCHARGE TYPE: continuous through an open outfall

COMMENTS:

In compliance except for slight exceedances of the Biochemical Oxygen Demand guideline in April and June. Improved operation is required.

IMIS NUMBER: 0001020007 SIC CODES: 103, 1031 MOE REGION: Southwest DISTRICT: Windsor

000102-00-0(7) H.J.HEINZ COMPANY OF CANADA LTD. LEAMINGTON REPORT DATE: 28 JUL 87

S U M M A R Y FOR EMIS. TYPE: 04 FINAL DISCHARGE - GROSS DATA DISCHARGED INTO: 02/003/ LAKE ERIE

INCLUDES CONTROL POINTS: 0100 0200

DATA FOR 1986

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	10120	10180	7990	10390	14560	5030	20880	50020	51280	22200	14560	6810	19502	
M3 /DAY (FTFLOW)	GUIDELINE														
BOD 5 DAY	ACTUAL	29	147	40	301	52	239	36	530	300	84	61	9	152	
KG /DAY (BOD5)	GUIDELINE	151.8	152.7	119.85	155.85	218.4	225.45	313.2	750.3	769.2	333	218.4	102.15	293	2
CHEM. OX DEMAND	ACTUAL	421	786	306	544	591	578	170	1313	1041	691	693	270	617	
KG /DAY (COD)	GUIDELINE														
PHOSPHOR UNF.TOT.	ACTUAL	3.93	3.18	1.66	3.89	12.18	4.89	10.07	25.54	16.98	13.91	5.72	4.22	8.8	
KG /DAY (PPUT)	GUIDELINE	10.12	10.18	7.99	10.39	14.56	15.03	20.88	50.02	51.28	22.2	14.56	6.81	19.5	
RESIDUE PARTIC.	ACTUAL	58	81	59	22	161	113	54	519	424	221	83	29	152.0	
KG /DAY (RSP)	GUIDELINE	151.8	152.7	119.85	155.849	218.4	225.449	52.2	750.3	769.2	333	218.4	102.15	270.8	

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Inco Ltd.
& PLANT LOCATION: Copper Cliff Nickel Refinery

INDUSTRIAL SECTOR: Metal Mining, Smelting, Refining

RECEIVING WATERBODY: DIRECT: Kelley Lake
INDIRECT: 62.5 km to Lake Huron (North Channel)

DESCRIPTION OF ACTIVITY: Various nickel products are made.

EFFLUENT QUALITY: Contains dissolved sulphates of nickel and copper.

EFFLUENT TREATMENT: Raw effluent is treated in two ponds with lime to precipitate the metals.

DISCHARGE TYPE: Continuous

COMMENTS:

Nickel exceeded the guideline for August and November; total metals June, August, November and December; pH over the guideline for September. The ammonia exceedances for November was most likely due to run-off from the dredged precipitates located above the treatment ponds for drying purposes.

IMIS NUMBER: 0001690403 SIC CODE: 295 MOE REGION: Northeast DISTRICT: Sudbury

22/07/87

000169-04-0(3) INCO LTD
CONTROL POINT: 0100 DATA FOR 1986

REPORT DATE: 22 JUL 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	2161	1997.8	1417.1	1286.3	1051.9	1547.9	513.4	382.6	1051.9	2163.8	2163.8	2163.8	1491.77	
M3 /DAY (FTFLOW)	GUIDELINE														
COPPER UNF.TOT.	ACTUAL	0.151	0.32	0.17	0.167	0.116	0.573	0.062	0.111	0.168	0.305	0.909	0.411	0.29	
KG /DAY (CUUT)	GUIDELINE	2.161	1.9978	1.4171	1.2863	1.0519	1.5479	0.5134	0.3826	1.0519	2.1638	2.1638	2.1638	1.49	
NICKEL UNF.TOT.	ACTUAL	0.779	1.1	0.468	0.592	0.199	1.548	0.354	0.409	0.438	1.106	2.64	2.099	0.98	
KG /DAY (NIUT)	GUIDELINE	2.161	1.9978	1.4171	1.2863	1.0519	1.5479	0.5134	0.3826	1.0519	2.1638	2.1638	2.1638	1.49	2
NH3-N TOTAL	ACTUAL	1.515	2.4	1.559	0.772	2.945	1.765	0.051	0.038	0.421	30.293	14.93	6.491	5.27	
KG /DAY (NNHTUR)	GUIDELINE	21.61	19.978	14.171	12.863	10.519	15.479	5.134	3.826	10.519	21.638	21.638	21.638	14.92	1
PH	ACTUAL	10.4	9.9	10.3	10.6	10.2	9.4	9.8	9.7	10.8	10.3	9.9	9.9	10.10	
(PH)	GUIDELINE														1
RESIDUE PARTIC.	ACTUAL	4.33	4	2.834	5.145	3.156	10.835	6.674	2.678	3.156	10.819	6.924	10.17	5.89	
KG /DAY (RSP)	GUIDELINE	32.415	29.967	21.2565	19.2945	15.7785	23.2185	7.701	5.739	15.7785	32.457	32.457	32.457	22.38	

NOTE: PH LIMIT 5.5-10.6, 0* INDICATES INTAKE EXCEEDED DISCHARGE, S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: INCO Ltd. Copper Cliff Creek Wastewater Treatment Plant

INDUSTRIAL SECTOR: Metal Mining, Smelting, Refining

RECEIVING WATERBODY: DIRECT: Junction Creek to Vermillion
INDIRECT: 70 km. to Lake Huron (North Channel) River to Spanish River

DESCRIPTION OF ACTIVITY: Smelting and refining of nickel, copper and precious metals.

EFFLUENT QUALITY: Contains dissolved nickel and copper sulphates and other metals.

EFFLUENT TREATMENT: Neutralization with lime.

DISCHARGE TYPE: Continuous

COMMENTS:

The pH was out of compliance for the entire year. Total metals and ammonia exceeded the guideline for May. The design basis for the pH limit is under review. The Certificate of Approval limits are: Iron 0.5 ppm, Nickel 0.5 ppm, Copper 0.2 ppm, Suspended Solids 15 ppm, and pH 5.5 to 9.5.

IMIS NUMBER: 0001690304 SIC CODE(S): 0592 MOE REGION: Northeast DISTRICT: Sudbury

222/07/87

000169-03-0(4) INCO LTD
CONTROL POINT: 0100 DATA FOR 1986

REPORT DATE: 22 JUL 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	145974	90290	135560	137990	67240	65340	60640	46840	52500	64874	57443	25535	79185.5	
M3 /DAY (FTFLOW)	GUIDELINE														
COPPER UNF.TOT.	ACTUAL	24.815	2.98	36.466	14.213	4.034	5.227	4.851	2.342	5.355	4.152	1.436	1.404	8.94	
KG /DAY (CUUT)	GUIDELINE	145.974	90.29	135.56	137.99	67.24	65.34	60.64	46.84	52.5	64.874	57.443	25.535	79.19	
IRON UNF.TOT.	ACTUAL	26.274	12.189	17.758	32.152	8.741	16.335	22.437	11.242	14.91	27.117	8.904	4.469	16.88	
KG /DAY (FEUT)	GUIDELINE	145.974	90.29	135.56	137.99	67.24	65.34	60.64	46.84	52.5	64.874	57.443	25.535	79.19	
NICKEL UNF.TOT.	ACTUAL	52.549	35.213	56.94	49.676	17.482	11.761	13.341	7.026	11.025	15.245	13.327	10.291	24.49	
KG /DAY (NIUT)	GUIDELINE	145.974	90.29	135.56	137.99	67.24	65.34	60.64	46.84	52.5	64.874	57.443	25.535	79.19	
NH3-N TOTAL	ACTUAL	890.407	733.606	1070.92	758.945	870.758			238.884	208.268	253.009	262.802	122.568	541.02	
KG /DAY (NNHTUR)	GUIDELINE	1459.74	902.9	1355.6	1379.9	672.4			468.4	525	648.74	574.43	255.35	824.25	1
PH	ACTUAL	10.1	10.1	10.1	10.2	10.2	10.2	10.2	10.3	10.4	10.1	10.1	10.1	10.17	
(PH)	REQUIREMENT														
RESIDUE PARTIC.	ACTUAL	1167.75	632.03	1355.6	1103.92	437.06	228.69	236.496	248.252	183.75	324.37	287.215	183.852	532.41	
KG /DAY (RSP)	GUIDELINE	2189.61	1354.35	2033.4	2069.85	1008.6	980.1	909.6	702.6	787.5	973.11	861.645	383.025	1187.78	
ZINC UNF.TOT.	ACTUAL	17.516	1.264	1.898	3.174	37.654	2.614	4.851	9.836	25.83	4.541	0.862	0.332	9.20	
KG /DAY (ZNUT)	GUIDELINE	145.974	90.29	135.56	137.99	67.24	65.34	60.64	46.84	52.5	64.874	57.443	25.535	79.19	

NOTE: PH LIMIT 5.5-10.6. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Inco Ltd. Crean Hill Mine
& PLANT LOCATION: Copper Cliff

INDUSTRIAL SECTOR: Metal Mining, Smelting, Refining

RECEIVING WATERBODY: DIRECT : Spanish R,
INDIRECT: 52.5 km to Lake Huron (North Channel)

DESCRIPTION OF ACTIVITY: Mining and primary crushing of ore.

EFFLUENT QUALITY: Contains copper, nickel and iron sulphates.

EFFLUENT TREATMENT: Effluent from tailings is neutralized with lime.

DISCHARGE TYPE: Intermittent to become continuous

COMMENTS:

Currently the effluent is sampled when discharged and the pH exceeded the guideline for March and May. The company will improve the lime addition system in 1987. This mine is to be in full operation in the fall of 1987.

IMIS NUMER: 0001690809 SIC CODE: 0592 MOE REGION: Northeast DISTRICT: Sudbury

22/07/87

000169-08-0(9) INCO LTD
CONTROL POINT: 0100 DATA FOR 1986

REPORT DATE: 22 JUL 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL			8769.7		1051.9				2163.8	2905.1			3722.62	
M3 /DAY (FTFLOW)	GUIDELINE														
COPPER UNF.TOT.	ACTUAL			0.263		0.021				0.108	0.012			0.10	
KG /DAY (CUUT)	GUIDELINE			8.7697		1.0519				2.1638	2.9051			3.72	
IRON UNF.TOT.	ACTUAL			1.315		0.032				0.281	0.096			0.43	
KG /DAY (FEUT)	GUIDELINE			8.7697		1.0519				2.1638	2.9051			3.72	
NICKEL UNF.TOT.	ACTUAL			0.789		0.095				0.151	0.212			0.31	
KG /DAY (NIUT)	GUIDELINE			8.7697		1.0519				2.1638	2.9051			3.72	
NH3-N TOTAL	ACTUAL			10.524		0.842				0.216	4.939			4.13	
KG /DAY (NNHTUR)	GUIDELINE			87.697		10.519				21.638	29.051			37.23	
PH	ACTUAL			11.5		10.9				8.5	8.7			9.90	
(PH)	GUIDELINE														2
RESIDUE PARTIC.	ACTUAL			43.849		2.104				2.164	2.905			12.76	
KG /DAY (RSP)	GUIDELINE			131.545		15.7785				32.457	43.5765			55.84	
ZINC UNF.TOT.	ACTUAL			0.175		0.147				0.043	0.006			0.09	
KG /DAY (ZNUT)	GUIDELINE			8.7697		1.0519				2.1638	2.9051			3.72	

NOTE: PH LIMIT 5.5-10.6. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Inco Ltd. Frood Stobie
& PLANT LOCATION: Emergency Tailings Area
Copper Cliff

INDUSTRIAL SECTOR: Metal Mining, Smelting, Refining

RECEIVING WATERBODY: DIRECT: 77.5 km to Lake Huron (North Channel)
INDIRECT:

DESCRIPTION OF ACTIVITY: Mining and concentrating sulphide ores for smelting.

EFFLUENT QUALITY: Contains nickel and iron sulphates.

EFFLUENT TREATMENT: Effluent from tailings area is neutralized with lime.

DISCHARGE TYPE: Intermittent

COMMENTS:

The company has proposed a treatment system scheme to eliminate the exceedances when the effluent is discharged. Effluent is only sampled when there is a discharge.

IMIS NUMBER: 0001690205 SIC CODE: 0592 MOE REGION: Northeast DISTRICT: Sudbury

22/07/87

000169-02-0(5) INCO LTD
CONTROL POINT: 0100 DATA FOR 1986
REPORT DATE: 22 JUL 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL				1430.1	54.5					245.3			576.63	
M3 /DAV (FTFLOW)	GUIDELINE														
COPPER UNF.TOT.	ACTUAL				8.144	0.04					1.531			3.24	
KG /DAV (CUUT)	GUIDELINE				1.4301	0.0545					0.2453			0.58	2
IRON UNF.TOT.	ACTUAL				131.998	14.715					27.228			57.98	
KG /DAV (FEUT)	GUIDELINE				1.4301	0.0545					0.2453			0.58	3
NICKEL UNF.TOT.	ACTUAL				26.814	0.621					3.581			10.34	
KG /DAV (NIUT)	GUIDELINE				1.4301	0.0545					0.2453			0.58	3
NH3-N TOTAL	ACTUAL				7.365	1.635					2.208			3.74	
KG /DAV (NNHTUR)	GUIDELINE				14.301	0.545					2.453			5.77	1
PH	ACTUAL				3.4	2.5					2.7			2.87	
(PH)	GUIDELINE														4
RESIDUE PARTIC.	ACTUAL				946.726						4.317			475.52	
KG /DAV (RSP)	GUIDELINE				21.4515						3.6795			12.57	2
ZINC UNF.TOT.	ACTUAL				1.023	0.021					0.126			0.39	
KG /DAV (ZNUT)	GUIDELINE				1.4301	0.0545					0.2453			0.58	

NOTE: PH LIMIT 5.5-10.6. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: INCO Ltd.
& PLANT LOCATION: Garson Mine

INDUSTRIAL SECTOR: Metal Mining, Smelting, Refining

RECEIVING WATERBODY: DIRECT: Junction Creek to Vermillion River
INDIRECT: 86 km. to Lake Huron (North Channel) to Spanish River

DESCRIPTION OF ACTIVITY: Mining and primary crushing of ore.

EFFLUENT QUALITY: Contains dissolved nickel and copper sulphates.

EFFLUENT TREATMENT: Effluent from tailings area is neutralized with lime.

DISCHARGE TYPE: Continuous from mine water treatment system

COMMENTS:

The pH exceeded the guideline value 9 months of the year; total metals for March and April. The high suspended solids was attributed to spring run-off. The mine is not being operated.

IMIS NUMBER: 0001690700 SIC CODE(S): 0592 MOE REGION: Northeast DISTRICT: Sudbury

22/07/87

000169-07-0(0) INCO LTD
CONTROL POINT: 0100 DATA FOR 1986
FLOW/LOADING PARAMETERS

REPORT DATE: 22 JUL 87

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES	
FLOW	ACTUAL	2882.9	2974	1953.1	2352.8	3419.1	2228.8	2257	2590	2590	2807	2323	2176	2546.13		
M3 /DAY (FTFLOW)	GUIDELINE															
COPPER UNF.TOT.	ACTUAL	0.029	0.059	0.045	0.155	0.079	0.089	0.09	0.119	0.031	0.07	0.037	0.048	0.07		
KG /DAY (CUUT)	GUIDELINE	2.8829	2.974	1.9531	2.3528	3.4191	2.2288	2.257	2.59	2.59	2.807	2.323	2.176	2.55		
IRON UNF.TOT.	ACTUAL	0.26	0.714	0.602	0.301	0.352	0.513	0.587	1.373	0.251	0.134	0.088	0.1	0.44		
KG /DAY (FEUT)	GUIDELINE	2.8829	2.974	1.9531	2.3528	3.4191	2.2288	2.257	2.59	2.59	2.807	2.323	2.176	2.55		
NICKEL UNF.TOT.	ACTUAL	0.548	0.506	1.398	1.687	0.503	0.468	0.203	0.616	0.184	0.895	0.606	0.672	0.69		
KG /DAY (NIUT)	GUIDELINE	2.8829	2.974	1.9531	2.3528	3.4191	2.2288	2.257	2.59	2.59	2.807	2.323	2.176	2.55		
NH3-N TOTAL	ACTUAL	17.895	18.439	8.789	9.176	18.463	4.123	3.386	3.541	6.993	3.368	3.484	2.132	8.32		
KG /DAY (NNHTUR)	GUIDELINE	28.829	29.74	19.531	23.528	34.191	22.288	22.57	25.9	25.9	28.07	23.23	21.76	25.46		
PH	ACTUAL	11	10.9	11.2	9.8	8.2	10.5	10.9	10.8	11.5	10.9	11	11	10.64		
(PH)	GUIDELINE															9
RESIDUE PARTIC.	ACTUAL	25.98	23.79	42.968	11.764	37.61	13.373	9.028	7.771	18.13	14.316	20.67	18.493	20.32		
KG /DAY (RSP)	GUIDELINE	43.2435	44.61	29.2965	35.292	51.2865	33.432	33.855	38.85	38.85	42.105	34.845	32.64	38.19		1
ZINC UNF.TOT.	ACTUAL	0.058	0.03	0.049	0.087	0.325	0.156	0.181	0.207	0.648	0.244	0.053	0.046	0.17		
KG /DAY (ZNUT)	GUIDELINE	2.8829	2.974	1.9531	2.3528	3.4191	2.2288	2.257	2.59	2.59	2.807	2.323	2.176	2.55		

NOTE: PH LIMIT 5.5-10.6. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Inco Ltd.
& PLANT LOCATION: Levack Tailings Area

INDUSTRIAL SECTOR: Metal Mining, Smelting, Refining

RECEIVING WATERBODY: DIRECT: Onaping R.
INDIRECT: 113 km to Lake Huron

DESCRIPTION OF ACTIVITY: Mining and crushing operations.

EFFLUENT QUALITY: Contains dissolved nickel and copper sulphates.

EFFLUENT TREATMENT: Effluent from tailings is limed prior to discharge.

DISCHARGE TYPE: Continuous

COMMENTS:

The pH exceeded the guideline value of 10.6 for 8 of 12 months; nickel for the month of June and total metals, the months of June and November. The company has investigated the effluent system control instruments and is proposing some improvements.

IMIS NUMBER: 0001690106 SIC CODE: 0592 MOE REGION: Northeast DISTRICT: Sudbury

25/08/87

000169-01-0(6) INCO LTD
CONTROL POINT: 0100 DATA FOR 1986

REPORT DATE: 22 JUL 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	1125.9	488.8	1125.5	1369.7	342.3	67.6	382.6	905.3	2128.4	1369.7	905.3	782.7	916.147	
M3 /DAY (FTFLOW)	GUIDELINE														
COPPER UNF.TOT.	ACTUAL	0.056	0.024	0.045	0.11	0.01	0.003	0.042	0.091	0.021	0.07	0.091	0.039	0.050	
KG /DAY (CUUT)	GUIDELINE	1.1259	0.4888	1.1255	1.3697	0.3423	0.0676	0.3826	0.9053	2.1284	1.3697	0.9053	0.7827	0.916	
IRON UNF.TOT.	ACTUAL	0.113	0.049	0.135	0.37	0.024	0.033	0.096	0.072	0.362	1.308	0.091	0.125	0.232	
KG /DAY (FEUT)	GUIDELINE	1.1259	0.4888	1.1255	1.3697	0.3423	0.0676	0.3826	0.9053	2.1284	1.3697	0.9053	0.7827	0.916	
NICKEL UNF.TOT.	ACTUAL	0.282	0.117	0.754	0.329	0.175	0.081	0.046	0.588	0.362	0.552	0.815	0.07	0.348	
KG /DAY (NIUT)	GUIDELINE	1.1259	0.4888	1.1255	1.3697	0.3423	0.0676	0.3826	0.9053	2.1284	1.3697	0.9053	0.7827	0.916	1
NH3-N TOTAL	ACTUAL	0.113	4.699	8.891	4.246	2.054	0.095	0.742	2.173	6.598	3.972	5.07	5.244	3.658	
KG /DAY (NNHTUR)	GUIDELINE	11.259	4.888	11.255	13.697	3.423	0.676	3.826	9.053	21.284	13.697	9.053	7.827	9.161	
PH	ACTUAL	11.6	11.4	10.9	11	10.5	8.9	10.7	9.4	10.9	10.6	11.4	11.7	10.750	
(PH)	GUIDELINE														6
RESIDUE PARTIC.	ACTUAL	12.4	9.79	6.753	9.588	1.027	0.27	2.678	5.432	14.899	19.176	21.727	13.306	9.754	
KG /DAY (RSP)	GUIDELINE	16.8885	7.332	16.8825	20.5455	5.1345	1.014	5.739	13.5795	31.926	20.5455	13.5795	11.7405	13.742	3
ZINC UNF.TOT.	ACTUAL	0.011	0.01	0.079	0.014	0.048	0.08	0.08	0.054	0.021	0.058	0.091	0.02	0.047	
KG /DAY (ZNUT)	GUIDELINE	1.1259	0.4888	1.1255	1.3697	0.3423	0.0676	0.3826	0.9053	2.1284	1.3697	0.9053	0.7827	0.916	

NOTE: PH LIMIT 5.5-10.6. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME:: INCO Ltd.
& PLANT LOCATION: Nolin Creek Wastewater Treatment Plant

INDUSTRIAL SECTOR: Metal Mining, Smelting, Refining

RECEIVING WATERBODY: DIRECT: Nolin Creek to Junction Creek to Vermillion River to Spanish River
INDIRECT: 77 km. to Lake Huron (North Channel)

DESCRIPTION OF ACTIVITY: Metallurgical complex that smelts and refines nickel, copper and associated metals from concentrates.

EFFLUENT QUALITY: Contains a variety of dissolved metal salts.

EFFLUENT TREATMENT: Neutralized by addition of lime.

DISCHARGE TYPE: Continuous

COMMENTS:
The Certificate of Approval limits; iron - 0.5 ppm, nickel - 0.5 ppm, copper 0.2 ppm, suspended solids 15 ppm and pH range of 5.5 to 9.5 were exceeded several times. The original design information which was the basis for the Certificate of Approval limits is being reviewed

IMIS NUMBER: 0001690601 SIC CODE: 0592 MOE REGION: Northeast DISTRICT:Sudbury

26/08/87

000169-06-0(1) INCO LTD
CONTROL POINT: 0100 DATA FOR 1986

REPORT DATE: 22 JUL 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	3240	4549	9882	22340	9530	9440	9150	12420	14840	14328	11247	8859	10818.8	
M3 /DAY (FTFLOW)	GUIDELINE														
COPPER UNF.TOT.	ACTUAL	0.875	0.068	0.464	5.585	0.286	0.755	0.641	0.994	0.905	1.605	0.394	0.585	1.10	
KG /DAY (CUUT)	GUIDELINE	0.648	0.9098	1.9764	4.468	1.906	1.888	1.83	2.484	2.968	2.8656	2.2494	1.7718	2.16	2
IRON UNF.TOT.	ACTUAL	4.049	1.037	3.34	15.794	2.859	3.682	3.935	4.595	4.897	8.568	2.609	7.442	5.23	
KG /DAY (FEUT)	GUIDELINE	1.62	2.2745	4.941	11.17	4.765	4.72	4.575	6.21	7.42	7.164	5.6235	4.4295	5.41	4
NICKEL UNF.TOT.	ACTUAL	1.458	0.619	2.37	7.149	1.715	1.51	1.922	2.36	2.671	2.837	2.283	2.33	2.44	
KG /DAY (NIUT)	GUIDELINE	3.24	4.549	9.882	22.34	9.53	9.44	9.15	12.42	14.84	14.328	11.247	8.859	10.82	
NH3-N TOTAL	ACTUAL	25.595	49.357	75.103	19.369	101.018			54.648	45.514	41.078	29.805	20.376	46.19	
KG /DAY (NNHTUR)	GUIDELINE	32.4	45.49	98.82	223.4	95.3			124.2	148.4	143.28	112.47	88.59	111.24	2
PH	ACTUAL	11.2	11.7	11.6	11.6	11	11.3	11.4	11.3	11.5	11.3	11.1	11.2	11.35	
(PH)	REQUIREMENT														12
RESIDUE PARTIC.	ACTUAL	42.12	22.75	49.41	201.06	35.261	51.92	84.18	78.246	83.104	85.968	56.235	53.154	70.28	
KG /DAY (RSP)	GUIDELINE	48.6	68.235	148.23	335.1	142.95	141.6	137.25	186.3	222.6	214.92	168.705	132.885	162.28	
ZINC UNF.TOT.	ACTUAL	0.097	0.045	0.059	0.514	2.097	0.85	1.19	5.092	2.656	0.616	0.101	0.035	1.11	
KG /DAY (ZNUT)	GUIDELINE	3.24	4.549	9.882	22.34	9.53	9.44	9.15	12.42	14.84	14.328	11.247	8.859	10.82	

NOTE: PH LIMIT 5.5-9.6, 0* INDICATES INTAKE EXCEEDED DISCHARGE, S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: INCO Metals Ltd.
& PLANT LOCATION: Port Colborne

INDUSTRIAL SECTOR: Metal Mining, Smelting and Refining

RECEIVING WATERBODY: DIRECT: Lake Erie
INDIRECT:

DESCRIPTION OF ACTIVITY: Electrolytic processes are used to recover pure metals like nickel, copper, silver, gold, etc.

EFFLUENT QUALITY:

EFFLUENT TREATMENT: Filtration plant.

DISCHARGE TYPE: open outfall

COMMENTS:

Company is in compliance.

IMIS NUMBER: 0001600105 SIC CODE: 295 MOE REGION: West Central DISTRICT: Welland

10/06/87

000160-01-0(5) INCO METALS COMPANY
CONTROL POINT: 0100 DATA FOR 1986

REPORT DATE: 25 JUN 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	14600	14700	17600	17600	16000	12200	7100	13500	19300	21500	17700	20000	15983.3	
M3 /DAV (FTFLOW)	GUIDELINE														
NICKEL UNF.TOT.	ACTUAL	4.38	2.9	3.5	5.3	3.2	1.2	1.4	2.7	3.9	4.3	3.5	4	3.4	
KG /DAV (NIUT)	GUIDELINE	14.6	14.7	17.6	17.6	16	12.2	7.1	13.5	19.3	21.5	17.7	20	16.0	
PH	ACTUAL		11	11	10.8	10.4	9.8	9.5	10.1	10.3	10.5	10.8	10.8	10.45	
(PH)	GUIDELINE														5
RESIDUE PARTIC.	ACTUAL	43.8	29	35	35	16	12	14	0	19	22	35	60	26.7	
KG /DAV (RSP)	GUIDELINE	219	220.5	264	264	240	183	106.5	202.5	289.5	322.5	265.5	300	239.7	

NOTE: PH LIMIT 5.5-10.6. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Inco Metals Co.
& PLANT LOCATION: Shebandowan

INDUSTRIAL SECTOR: Metal Mining, Smelting, Refining

RECEIVING WATERBODY: DIRECT: Shebandowan R. to Kaministiquia R.
INDIRECT: 130 km to Lake Superior

DESCRIPTION OF ACTIVITY: Base metal mining.

EFFLUENT QUALITY: Heavy metals, suspended solids and pH.

EFFLUENT TREATMENT: Polishing lagoon (tailings pond).

DISCHARGE TYPE: Continuous

COMMENTS:

In compliance during discharge. Ceased operation as of January 1986. May resume operation pending economic climate.

A bioassay conducted in 1986, indicated that the tailings pond discharge was not lethal to fish.

IMIS NUMER: 0001690908 SIC CODE: 0592 MOE REGION: Northwest DISTRICT: Thunder Bay

04/06/87

000169-09-0(8) INCO METALS COMPANY
CONTROL POINT: 0100 DATA FOR 1986

REPORT DATE: 05 AUG 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	3000												3000	
M3 /DAY (FTFLOW)	GUIDELINE														
ACIDITY TOTAL	ACTUAL	18												18	
KG/D (ACDT)	GUIDELINE														
ALK TOTAL	ACTUAL	240												240	
KG/D AS CACO3	GUIDELINE														
ARSENIC UNF.TOT.	ACTUAL	0												0	
KG/D (ASUT)	GUIDELINE														
CYANIDE FREE	ACTUAL	0												0	
KG/D (CCNFUR)	GUIDELINE														
COPPER UNF.TOT.	ACTUAL	0.021												0.021	
KG/D (CUUT)	GUIDELINE	0.9												0.9	
IRON UNF.TOT.	ACTUAL	0.393												0.393	
KG/D (FEUT)	GUIDELINE	1.5												1.5	
HARDNESS TOTAL	ACTUAL	0												0	
KG/D (HARDT)	GUIDELINE														
MERCURY UNF.TOT.	ACTUAL	0.0609												0.0609	
KG/D (HGUT)	GUIDELINE														
NICKEL UNF.TOT.	ACTUAL	0.597												0.597	
KG/D (NIUT)	GUIDELINE	1.5												1.5	
NH3-N FIL.REAC	ACTUAL	0.9												0.9	
KG/D (NNH3FR)	GUIDELINE	30													
LEAD UNF.TOT.	ACTUAL	0.075												0.075	
KG/D (PBUT)	GUIDELINE	6												6	
PH	ACTUAL	7.1												7.1	
(PH)	GUIDELINE														
RESIDUE FILTERED	ACTUAL	2400												2400	
KG/D (RSF)	GUIDELINE														
RESIDUE PARTIC.	ACTUAL	6												6	
KG/D (RSP)	GUIDELINE	45												45	
ZINC UNF.TOT.	ACTUAL	0.06												0.06	
KG/D (ZNUT)	GUIDELINE	1.5												1.5	

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: International Minerals and Chemicals Dunnville

INDUSTRIAL SECTOR: Industrial Minerals

RECEIVING WATERBODY: DIRECT: Grand River
INDIRECT: 3 km to Lake Erie

DESCRIPTION OF ACTIVITY: Phosphate ore, sulphuric acid and phosphoric acid are used to make fertilizer.

EFFLUENT QUALITY:

EFFLUENT TREATMENT: Lime precipitation.

DISCHARGE TYPE: continuous at shoreline

COMMENTS:

Phosphorus not in compliance. Since plant shut down, phosphorus loadings have continued to decline. Loadings for Jan. - June 1987 are in compliance. WWTP continues to operate to treat phosphorus in storm runnoff. Company is preparing decommissioning plan for closure of gypsum ponds.

IMIS NUMBER: 0001500008 SIC CODE: 372 MOE REGION: West Central DISTRICT: Haldimand-Norfolk/Brant

27/07/87

000150-00-0(8) INTERNATIONAL MINERALS AND CHEMICAL CORPORAT

REPORT DATE: 28 JUL 87

CONTROL POINT: 0300 DATA FOR 1986

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL		2101.2	2714.92	2962.23	2569.45	2386.69	2890.4	3117.25	3251.81	3595.95	3291.36	2977.68	2896.26	
M3 /DAY (FTFLOW)	GUIDELINE														
PH	ACTUAL	9.6	10.1	10.1	10.3	10.3	9.73	9.85	9.83	9.8	10	10.3	10.2	10.0091	
(PH)	GUIDELINE														12
PHOSPHOR UNF.TOT.	ACTUAL	10.4	3.4	9.5	6.2	7.2	3.2	6	5.4	3.9	4	4.24	3.47	5.57582	
KG /DAY (PPUT)	GUIDELINE	4.54	4.54	4.54	4.54	4.54	4.54	4.54	4.54	4.54	4.54	4.54	4.54	4.54	6

NOTE: PH LIMIT 5.5-9.5, 0* INDICATES INTAKE EXCEEDED DISCHARGE, S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: James River Marathon Ltd. (formerly American Can) Marathon

INDUSTRIAL SECTOR: Kraft Pulp and Paper Mill

RECEIVING WATERBODY: DIRECT: Lake Superior
INDIRECT:

DESCRIPTION OF ACTIVITY: Pulp is produced from chips (both hardwood and softwoods) by the kraft pulping process. The pulp is bleached. Crude tall oil is removed and sold.

EFFLUENT QUALITY: Contains suspended solids (bark and wood fibres) and many organic (some chlorinated) compounds.

EFFLUENT TREATMENT: Primary clarifier on high-solids wastewaters and foam barrier remove solids. The woodroom (debarking) is dry.

DISCHARGE TYPE: Continuous through a diffuser.

COMMENTS:

In compliance. Existing Control Order requires further stepwise reductions in Total Suspended Solids and Biochemical Oxygen Demand as follows: BOD to 35 kg/ADMT by Dec. 31, 1986 and 30 kg/ADMT by Dec.31, 1989 and TSS to 9,000 kg/day by Dec. 31, 1984 (met in 1983), 6,000 kg/day by Dec. 31, 1985 and 4,000 kg/day by June 30, 1988 all averaged over 30 consectutive working days. The Order also requires compliance with the federal toxicity requirement by December 31,1989.

The mill's discharge is normally toxic to fish. Five bioassays conducted in 1986 indicated that, statistically, the percentage effluent required to kill 50% of the test fish by the end of four days exposure ranged from 12.5% to 15.1%.

IMIS NUMBER: 0000850008 SIC CODE(S): 271 MOE REGION: Northwest DISTRICT: Thunder Bay

25/08/87

000085-00-0(8) JAMES RIVER MARATHON LTD.
CONTROL POINT: 0100 DATA FOR 1986

REPORT DATE: 05 AUG 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	65085	65975	67019	65351	65704	62908	64427	70640	66504	65529	57439	57660	64520.1	
M3 /DAY (FTFLOW)	REQUIREMENT														
BOD 5 DAY	ACTUAL	11520	15310	17630	17190	14780	14030	13080	13850	12900	13630	12060	15630	14300.8	
KG /DAY (BOD5)	REQUIREMENT	19207	20735	19989	20564	20270	19759	18282	19872	17793	20025	18900	19185	19548	
PHOSPHOR UNF.TOT.	ACTUAL	31.9	32.3	32.8	32.0	32.2	27.1	31.9	24.7	29.9	33.4	27.6	27.7	30.3	
KG /DAY (PPUT)	GUIDELINE	65.1	66	67	65.4	65.7	62.9	64.4	70.6	66.5	65.5	57.4	57.7	64.5	
RESIDUE PARTIC.	ACTUAL	4360	2970	5030	2740	3090	2960	2580	1840	1730	2360	2700	2650	2917.5	
KG /DAY (RSP)	REQUIREMENT	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: J. M. Schneider Inc. Ayr

INDUSTRIAL SECTOR: Food and Beverage

RECEIVING WATERBODY: DIRECT: Nith River to Grand River
INDIRECT: 196 km to Lake Erie

DESCRIPTION OF ACTIVITY: Beef and pork is packaged and poultry is deep fried and packaged for retail sales.

EFFLUENT QUALITY: Contains dissolved organics and phosphorus.

EFFLUENT TREATMENT: Grease skimming, flow equalization, dissolved air flotation, aeration and sedimentation.

DISCHARGE TYPE: seven day continuous flow through a submerged outfall

COMMENTS:

Not in compliance for first part of 1986. Treatment plant modifications became fully operational in June, and company reported discharge quality for June - December 1986 showed full compliance for contaminant loads with two minor concentration exceedances each for phosphorus and oil and grease. Flow meter installed in May 1986 showed actual discharge volume is approximately one fourth of previously reported flows, i.e. actual loads for Jan - May were one fourth of those listed herein. MOE survey of summer 1986 found Company in compliance. Monthly requirements are those of Certificate of Approval, revised in November 1986.

IMIS NUMBER: 0001440007 SIC CODES: 1011, 1012 MOE REGION: West Central DISTRICT: Cambridge

02/06/87

000144-00-0(7) J.M.SCHNEIDER INC
CONTROL POINT: 0100 DATA FOR 1986
REPORT DATE: 29 JUL 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	423.2	498.6	440.1	486.1	480.49	89.62	87.63	106.39	120.91	126.16	119.29	58.48	253.08	
M3 /DAY (FTFLOW)	REQUIREMENT	363	363	363	363	363	363	363	363	363	363	363	363	363	5
BOD 5 DAY	ACTUAL	7.19	9.72	7.26	6.1	2.33	0.45	0.39	0.71	1.22	1.26	1.19	0.58	3.2	
KG /DAY (BOD5)	REQUIREMENT	5.46	5.46	5.46	5.46	5.46	5.46	5.46	5.46	5.46	5.46	5.46	5.46	5.46	4
NH3-N TOTAL	ACTUAL											0.04	0.05	0.045	
KG /DAY (NNHTFR)	REQUIREMENT											3.64	3.64	3.64	
NH3-N TOTAL	ACTUAL	3.81	4.94	1.23	19.5	3.46	0.03	0.06	0.11	0.4	0.17			3.371	
KG /DAY (NNHTUR)	REQUIREMENT	3.64	3.64	3.64	3.64	3.64	3.64	3.64	3.64	3.64	3.64			3.64	3
PH	ACTUAL	7.45	7.04	6.8	7	6.91	7.45	8	7.5	7.33	7.3	7.4	7.1	7.3	
(PH)	REQUIREMENT														
PHOSPHOR UNF.TOT.	ACTUAL	3.21	0.4	1.12	0.35	0.32	0.09	0.02	0.04	0.03	0.14	0.02	0.01	0.48	
KG /DAY (PPUT)	REQUIREMENT	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	3
RESIDUE PARTIC.	ACTUAL	16.21	15.1	20.1	12.6	5.4	1.2	0.37	0.56	0.93	0.54	0.67	0.74	6.20	
KG /DAY (RSP)	REQUIREMENT	5.46	5.46	5.46	5.46	5.46	5.46	5.46	5.46	5.46	5.46	5.46	5.46	5.46	4
SOLVENT EXTRACT.	ACTUAL	0.51	5.76	5.06	9.7	43.7	0.16	1.52	0.16	2.08	0.35	0.73	0.4	5.84	
KG /DAY (SOLEXT)	REQUIREMENT	5.46	5.46	5.46	5.46	5.46	5.46	5.46	5.46	5.46	5.46	5.46	5.46	5.46	3

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Kerr Addison Mines
& PLANT LOCATION: Virginiatown

INDUSTRIAL SECTOR: Metal Mining, Smelting, Refining

RECEIVING WATERBODY: DIRECT: Larder Lake to Larder R.
INDIRECT: Ottawa R.

DESCRIPTION OF ACTIVITY: Gold mining and recovery using a cyanide circuit.

EFFLUENT QUALITY: Contains arsenic, cyanide, copper, iron, nickel, dissolved solids and zinc.

EFFLUENT TREATMENT: Tailings, Barren Solution Pond.

DISCHARGE TYPE: Continuous

COMMENTS:
A conditional C. of A. was issued in 1984 to allow modifications to the tailings dam. This work was completed in 1984. A condition of the C. of A. required the company to submit a report on the various alternatives of effluent treatment and a proposal to improve effluent quality. As a result of the report and proposal, a conditional C. of A was issued to Kerr Addison, allowing them to construct a barren solution retention pond within the existing tailings impoundment area. Special terms and conditions No. 3 and 4 on the C. of A read as follows:
3.) KERR ADDISON MINES LIMITED shall submit to the Ministry's District Officer in Timmins on January 31 of 1987 and 1988, a performance evaluation report on the operation of the wastewater treatment system for the period from January 1 to December 31 of the years 1986 and 1987. Each report shall tabulate and interpret all water quality and flow monitoring data collected during the year and describe any future revisions in the system that are required to improve the operation of the overall wastewater facility. A proposed schedule of implementation for the revisions is also to be provided.
4.) If the results of the above monitoring programs presented in the performance evaluation report indicate that the final effluent exceeds the Ministry's effluent quality requirements as outlined in the Ontario Mineral Industry Guideline, October 1, 1981, or the Provincial Water Quality Objectives (May 1984), as they may be amended from time to time, whichever is the more restrictive, KERR ADDISON MINES LIMITED shall implement the necessary corrective measures acceptable to the Ministry to effect compliance by October 31, 1988.
As a result of these conditions exceedances of the guidelines are not necessarily legal exceedances. For this reason, Kerr Addison has no exceedances for 1986. However, effluent quality remains poor.
Two bioassays conducted in 1986, indicated that the final effluent was toxic to fish and that it would take, statistically 7.6% and 17.8% effluent to kill 50% of the test fish by the end of four days exposure.
IMIS NUMER: 0001350008 SIC CODE: 052 MOE REGION: Northeast DISTRICT: Timmins
12/06/87

000135-00-0(8) KERR ADDISON MINES LIMITED
CONTROL POINT: 0100 DATA FOR 1986

REPORT DATE: 25 JUN 87

CONCENTRATION PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
ARSENIC UNF.TOT.	ACTUAL	0.99	0.79	1.78	1.16		0.92	1.06	1.15	3.30	1.31	1.16	1.86	1.41	
MG/L AS AS	GUIDELINE	0.50	0.50	0.50	0.50		0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	11
CYANIDE AVAIL	ACTUAL	7.50	7.30	24.00	10.10	4.80	3.80	3.50	1.70	4.30	7.10	5.70	6.90	7.23	
MG/L AS HCN	GUIDELINE	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	11
COPPER UNF.TOT.	ACTUAL	0.20	0.85	1.26	1.09	0.69	0.83	0.55	0.83	0.95	1.13	0.87	0.98	0.85	
MG/L AS CU	GUIDELINE	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	3
IRON UNF.TOT.	ACTUAL	1.00	1.10	1.01	0.77	1.87	1.18	1.18	0.52	1.37	0.97	1.18	0.66	1.07	
MG/L AS FE	GUIDELINE														
NICKEL UNF.TOT.	ACTUAL	0.94	1.66	2.58	1.91	1.46	2.05	1.87	1.96	3.01	3.86	2.90	2.47	2.22	
MG/L AS NI	GUIDELINE	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	11
PH	ACTUAL	9.70	9.70	9.90	9.07	8.40	8.90	8.90	8.90	8.80	8.50	8.60	9.30	9.06	
(PH)	GUIDELINE														
RESIDUE FILTERED	ACTUAL	7.20		191.60										99.40	
MG/L (RSF)	GUIDELINE														
ZINC UNF.TOT.	ACTUAL	0.19	0.93	1.78	1.21	0.47	0.45	4.86	0.22	0.27	0.29	0.69	0.60	1.00	
MG/L AS ZN	GUIDELINE	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	3

NOTE: PH LIMIT 5.5-10.6, 0* INDICATES INTAKE EXCEEDED DISCHARGE, S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Kidd Creek Mines Ltd. - Metallurgical Site Timmins

INDUSTRIAL SECTOR: Metal Mining, Smelting, Refining

RECEIVING WATERBODY: DIRECT: man-made ditch
INDIRECT: Porcupine River

DESCRIPTION OF ACTIVITY: Crushed ore is concentrated, smelted and refined into zinc, copper and gold. Sulphuric acid is made from SO2.

EFFLUENT QUALITY: Contains dissolved metal salts of nickel, copper, zinc etc.

EFFLUENT TREATMENT: Effluent is limed and overflow (decant) is discharged.

DISCHARGE TYPE: Continuous

COMMENTS:

The Metsite effluent quality was consistently in compliance with the Federal Metal Mining Liquid Effluent Regulations with the exception of the month of April for the zinc parameter. This value is questionable as an analysis of 2.5 mg/l was preceded by a reading of 0.1 mg/l 2 days before and 0.3 mg/l 2days following the grab sample.

Compliance samples collected and analyzed by MOE have a lower detection for Cu, Fe, Pb. Therefore, Kidd data below detection limit could not be directly compared. However, all parameters compared were within 25% variability except Fe in July and Zn in August. Since these were isolated incidents, sampling error is suspected.

Two bioassays conducted in 1986 indicated that the discharge at the Met Site was not acutely lethal to fish.

IMIS NUMER: 0000990002 SIC CODES: 0594, 0591, 295 MOE REGION: Northeast DISTRICT: Timmins

10/06/87

000099-00-0(2) KIDD CREEK MINES LTD. METALLURGICAL SITE
CONTROL POINT: 0100 DATA FOR 1986
CONCENTRATION PARAMETERS

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
ARSENIC UNF.TOT.	ACTUAL	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01		
MG/L (ASUT)	GUIDELINE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5		
COPPER FIL.TOT.	ACTUAL	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01		
MG/L (CUFT)	GUIDELINE	1	1	1	1	1	1	1	1	1	1	1	1		
IRON FIL.TOT.	ACTUAL	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01		
MG/L (FEFT)	GUIDELINE	1	1	1	1	1	1	1	1	1	1	1	1		
MERCURY UNF.TOT.	ACTUAL	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001		
MG/L (HGUT)	GUIDELINE	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001		
NH3-N FIL.REAC	ACTUAL	0.9	1	1	1.1	0.5	0.4	0.7	0.2	0.3	0.9	0.5	1.2	0.72	
MG/L (NNH3FR)	GUIDELINE	10	10	10	10	10	10	10	10	10	10	10	10	10	
PH	ACTUAL	11.1	11	10.8	8.7	8.9	8.5	9.5	9	9.4	9.5	10.7	11	9.86	
(PH)	GUIDELINE														5
RESIDUE PARTIC.	ACTUAL	14.6	21	15	<10	<10	<10	11	<10	13	<10	12	15		
MG/L (RSP)	GUIDELINE	15	15	15	15	15	15	15	15	15	15	15	15		1
RESIDUE TOTAL	ACTUAL	2228	2186	2237	1623	1734	1962	2104	2037	1989	2044	2022	2221	2032	
MG/L (RST)	GUIDELINE														
SULPHATE FIL.REAC	ACTUAL	1263	1258	1225	1002	1025	1267	1364	1369	1246	1239	1198	1231	1224	
MG/L (SSO4FR)	GUIDELINE														
ZINC UNF.TOT.	ACTUAL	< 0.1	< 0.1	< 0.1	2.6	< 0.1	< 0.1	< 0.1	0.3	< 0.1	< 0.1	< 0.1	< 0.1		
MG/L (ZNUT)	GUIDELINE	1	1	1	1	1	1	1	1	1	1	1	1		1

NOTE: PH LIMIT 5.5-10.6. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Kidd Creek Mines Ltd.
& PLANT LOCATION: - Mine Site
Timmins

INDUSTRIAL SECTOR: Metal Mining, Smelting, Refining

RECEIVING WATERBODY: DIRECT : Kidd Creek
INDIRECT: Moose R.

DESCRIPTION OF ACTIVITY: Mine site ore is crushed for further processing at the metallurgy site.

EFFLUENT QUALITY: Tailings effluent contains dissolved metal salts of nickel, copper, zinc etc..

EFFLUENT TREATMENT:

DISCHARGE TYPE: Continuous

COMMENTS:

Zinc values were not in compliance with the Provincial Mineral Industry Effluent Guidelines for 2 of the 12 months. These values were associated with high water flow. Zinc values were not in compliance with the Federal Metal Mining Effluent Regulations for 7 of the 12 months. This disparity exists due to the effluent treatment being designed to achieve a zinc level of less than 1 mg/l while maintaining a pH of less than 10.6 as per Provincial Guideline. This pH limit, however, prevents compliance with the Federally regulated level of 0.5 mg/l for zinc where no upper limit for pH exists.

Compliance samples collected and analyzed by MOE have a lower detection for Cu, Fe, Pb. Therefore, Kidd data below detection limit could not be directly compared. However, all parameters compared between the MOE and Kidd Labs were within 25 per cent variability with the exception of sulphates in June and zinc in July. Since neither parameter showed this variability on more than one occasion, sampling error is suspected.

IMIS NUMER: 0000990101 SIC CODES: 0594, 0591, 295 MOE REGION: Northeast DISTRICT: Timmins

10/06/87

000099-01-0(1) KIDD CREEK MINES LTD. MINE SITE
CONTROL POINT: 0100 DATA FOR 1986

CONCENTRATION PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
COPPER FIL.TOT.	ACTUAL	< 0.1	< 0.1	< 0.1	0.1	0.2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		
MG/L (CUFT)	GUIDELINE	1	1	1	1	1	1	1	1	1	1	1	1		
IRON FIL.TOT.	ACTUAL	< 0.1	< 0.1	< 0.1	< 0.1	0.2	< 0.1	< 0.1	< 0.1	< 0.1	0.25	0.25	< 0.1		
MG/L (FEFT)	GUIDELINE	1	1	1	1	1	1	1	1	1	1	1	1		
MERCURY UNF.TOT.	ACTUAL	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001	< .001		
MG/L (HGUT)	GUIDELINE	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001		
NH3-N FIL.REAC	ACTUAL	4.9	8.3	8.5	1.7	0.2	1.2	0.9	0.88	0.98	2.2	1.6	3.3	2.89	
MG/L (NNH3FR)	GUIDELINE	10	10	10	10	10	10	10	10	10	10	10	10	10	
PH	ACTUAL	11.1	10.2	10.8	10	9.9	10.5	10.7	10.4	11.3	9.9	10.5	11.6	10.58	
(PH)	GUIDELINE														5
RESIDUE PARTIC.	ACTUAL	17	13	11	15	< 10	21	<10	28	14.8	17	11.8	41		
MG/L (RSP)	GUIDELINE	15	15	15	15	15	15		15	15	15	15	15		5
RESIDUE TOTAL	ACTUAL	751	861	950	455	249	425	608	590	951	339	354	586	599	
MG/L (RST)	GUIDELINE														
SULPHATE FIL.REAC	ACTUAL	347	389	389	254	100	205	274	299	196	109	170	458	265	
MG/L (SSO4FR)	GUIDELINE														
ZINC UNF.TOT.	ACTUAL	0.2	0.7	0.3	0.7	2.6	0.5	0.5	0.88	0.78	0.6	2.05	< .01		
MG/L (ZNUT)	GUIDELINE	1	1	1		1	1	1	1	1	1	1	1		2

NOTE: PH LIMIT 5.5-10.6. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Kimberly-Clark of Canada Huntsville

INDUSTRIAL SECTOR: Pulp and Paper Mill

RECEIVING WATERBODY: DIRECT: Muskoka R.
INDIRECT:

DESCRIPTION OF ACTIVITY: Converts pulp into personal paper products

EFFLUENT QUALITY. Practically zero effluent

EFFLUENT TREATMENT: Conventional and tertiary

DISCHARGE TYPE: Intermittent

COMMENTS:

In compliance. Direct discharge seasonal. Approximately 6 months out of the year. Alternate disposal is land spraying. During July to October company sprayed on approved area - no discharge.

IMIS NUMER: 0000830109 SIC CODE: 271 MOE REGION: Central DISTRICT: Barrie

05/06/87

000083-01-0(9) KIMBERLY-CLARK OF CANADA LIMITED HUNTSVILLE

REPORT DATE: 25 JUN 87

CONTROL POINT: 0100 DATA FOR 1986

FLOW LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	849.31	997.62	1220.74	684.82	87.26	832.56					465.28	662.30	724.99	
M3 /DAY (FTFLOW)	GUIDELINE														
CHEM. OX DEMAND	ACTUAL	50.11	91.07	95.14	52.73	8.64	71.60					26.99	43.54	55.64	
KG/D (COD)	REQUIREMENT	800	800	800	800	800	800					800	800	800.0	
PHOSPHOR UNF.TOT.	ACTUAL	0.003	0.002	0.006	0.004	0.0005	0.012					0.005	0.012	0.006	
KG/D (PPUT)	REQUIREMENT	0.3	0.3	0.3	0.3	0.3	0.3					0.3	0.3	0.3	
RESIDUE FILTERED	ACTUAL	4.25	4.03	6.51	4.80	0.17	4.17					1.41	2.37	3.2	
KG/D (RSF)	REQUIREMENT	151	151	151	151	151	151					151	151	151.0	

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Kimberly Clark of Canada Ltd. St. Catharines

INDUSTRIAL SECTOR: Pulp and Paper Mill

RECEIVING WATERBODY: DIRECT: Old Welland Canal to Twelve Mile Creek
INDIRECT: 10.0 km to Lake Ontario

DESCRIPTION OF ACTIVITY: Pulp and clean waste paper are made into tissue and special papers.

EFFLUENT QUALITY: Residual solids make effluent look "milky".

EFFLUENT TREATMENT: "Saveall" screens precede primary clarifier and retention ponds for solids removal..

DISCHARGE TYPE: continuous through an open outfall

COMMENTS:

Not in compliance. Effluent quality not in compliance for BOD5. Target loads set by Pulp and Paper Committee consistent with best practicable technology. Increased paper recycling overloaded biological treatment system; company reducing paper recycling.

The mill's discharge is normally not toxic to fish. A bioassay conducted in 1986, indicated that the final treated effluent was not acutely-lethal to test fish after a four day exposure.

IMIS NUMBER: 0000830208 SIC CODE: 271 MOE REGION: West Central DISTRICT: Welland

10/06/87

000083-02-0(8) KIMBERLY CLARK OF CANADA LTD.
CONTROL POINT: 0100 DATA FOR 1986

REPORT DATE: 25 JUN 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	9196	9779	9622	9765	1042	9967	8837	10710	10820	10810	9912	9049	9125.73	
M3 /DAY (FTFLOW)	GUIDELINE														
BOD 5 DAY	ACTUAL	540	690	540	390	580	502.3	330	432.4	518.2	392.3	387.6	264.9	463.97	
KG /DAY (BOD5)	GUIDELINE	362	362	362	362	362	362	362	362	362	362	362	362	362	10
RESIDUE FILTERED	ACTUAL	990	1080					460						843.3	
KG /DAY (RSF)	GUIDELINE														
RESIDUE PARTIC.	ACTUAL							50						50	
KG /DAY (RSP)	GUIDELINE							132.6						132.6	

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

CONTROL POINT: 0300 DATA FOR 1986

REPORT DATE: 25 JUN 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
RESIDUE FILTERED	ACTUAL						592		624.1	914.2	758.6	569.9	285	624.0	
KG /DAY (RSF)	GUIDELINE														
RESIDUE PARTIC.	ACTUAL					35.1648			0*	0	0	0	0	5.024	
KG /DAY (RSP)	GUIDELINE						362		362	362	362	362	362	362	

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Kimberly-Clark of Canada Ltd. Terrace Bay

INDUSTRIAL SECTOR: Pulp and Paper Mill

RECEIVING WATERBODY: DIRECT: Blackbird Creek
INDIRECT: Lake Superior (Jackfish Bay)

DESCRIPTION OF ACTIVITY: Hardwood and softwood logs are made into bleached pulp by the kraft pulping process

EFFLUENT QUALITY: Contains suspended solids (bark and wood fibres) and organic compounds (some chlorinated) from the pulping process.

EFFLUENT TREATMENT: Clarifiers, spill collection. Two clarifiers remove solids and foul condensates are steam stripped to remove odourous organics.

DISCHARGE TYPE: continuous surface

COMMENTS:

There was one phosphorus guideline exceedance recorded during July 1987. This measurement is not consistent with typical mill levels and is believed to be an anomaly. There were no exceedances of the suspended solids requirement of 8.5 tonnes per day (8,500 kg/day)

Effluent did not meet the 1986 toxicity requirement. The 1986 Control Order which expired December 31, 1986, included measures to further improve effluent quality. BOD to be reduced to 30 kg/ADMT by Oct. 31, 1986 and to produce an effluent non-lethal to fish (1986). Control Order amended in 1986. A new Control Order issued in 1987.

The mill's discharge is normally toxic to fish. Six bioassays conducted in 1986 indicated that, statistically, the percentage effluent required to kill 50 % of the test fish by the end of the four days exposure ranged from 12.5% to 45.6%.

IMIS NUMBER: 0000830000 SIC CODE: 271 MOE REGION: Northwest DISTRICT: Thunder Bay

25/08/87

000083-00-0(0) KIMBERLY-CLARK OF CANADA LTD.
CONTROL POINT: 0100 DATA FOR 1986

REPORT DATE: 26 AUG 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	109000	105000	108000	120000	100000	114000	127000	115000	116000	109000	99000	102000	110333	
M3 /DAY (FTFLOW)	GUIDELINE														
BOD 5 DAY	ACTUAL	31000	31100	31500	34000	34000	32000	33000	31000	24000	26000	22000	25000	29550	
KG /DAY (BOD5)	REQUIREMENT	39640	41920	44840	48000	44920	41400	43720	42000	43160	48400	29130	29460	41383	
PHOSPHOR UNF.TOT.	ACTUAL	66	58	64	86.2	90	58	187	51	81	55	58	62	76.35	
KG /DAY (PPUT)	GUIDELINE	109	105	108	120	100	114	127	115	116	109	99	102	110.3	1
RESIDUE PARTIC.	ACTUAL	6400	5000	5700	6870	4780	6010	5740	5430	5290	3990	4220	4710	5345	
KG /DAY (RSP)	REQUIREMENT	8500	8500	8500	8500	8500	8500	8500	8500	8500	8500	8500	8500	8500	

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Kraft Foods Ltd. Ingleside

INDUSTRIAL SECTOR: Food and Beverage

RECEIVING WATERBODY: DIRECT: Hoople Creek
INDIRECT: 2.0 km to St. Lawrence River

DESCRIPTION OF ACTIVITY: Milk is made into cheese

EFFLUENT QUALITY: Effluent generated by the cleaning of cheese making equipment. Contains dissolved and suspended milk solids.

EFFLUENT TREATMENT: Extended aeration using diffused air.

DISCHARGE TYPE: continuous via a ditch.

COMMENTS:

BOD not in compliance. Operational and design problems with the treatment plant caused elevated levels of biochemical oxygen demand and suspended solids as well as odours. Company installed additional aeration equipment to increase the amount of air going to the treatment plant by 50%. Ministry approved the installation on condition that the company provide a design report for a treatment system which will solve the odour problems and meet the Ministry requirements for the discharge of BOD, suspended solids and phosphorus.

IMIS NUMBER: 0001940006 SIC CODE: 104 MOE REGION: Southeast DISTRICT: Cornwall

03/06/87

000194-00-0(6) KRAFT LIMITED
CONTROL POINT: 0200 DATA FOR 1986

REPORT DATE: 29 JUL 87

CONCENTRATION PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
BOD 5 DAY	ACTUAL	15.4	14.4	13.8	30.8	30.65	30	30.7	20.6	16.8	26.5	22.1	15.7	22.3	
MG/L AS O (BOD5)	REQUIREMENT	25	25	25	25	25	25	25	25	25	25	25	25	25	5
PHOSPHOR UNF.TOT.	ACTUAL	6.1	7	6.8	5.5	4.2	6.2	8.5	5.2	5.8	6.4	5.9	1.2	5.73	
MG/L AS P (PPUT)	REQUIREMENT	1	1	1	1	1	1	1	1	1	1	1	1	1	12
RESIDUE PARTIC.	ACTUAL	27.8	43.5	50	35.6	55.9	103.3	100	39	30.5	50	45	16.2	49.7	
MG/L (RSP)	REQUIREMENT	25	25	25	25	25	25	25	25	25	25	25	25	25	11

NOTE: PH LIMIT 5.5-9.5, 0* INDICATES INTAKE EXCEEDED DISCHARGE, S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Lac Minerals (Macassa Div.)
(Formerly Willroy Mines)
& PLANT LOCATION: Kirkland Lake

INDUSTRIAL SECTOR: Metal Mining, Smelting, Refining

RECEIVING WATERBODY: DIRECT: Amikougami Cr.
INDIRECT: Blanche River

DESCRIPTION OF ACTIVITY: Gold mining, milling and recovery using Cyanide Circuit Recovery.

EFFLUENT QUALITY: Contains dissolved metal salts of copper, nickel, zinc etc

EFFLUENT TREATMENT: Tailings effluent.

DISCHARGE TYPE: Continuous

COMMENTS:

Parameters reported on a monthly basis: cyanide (total) - 8 exceedances; suspended solids - no exceedances; copper - 3 exceedances; pH - no exceedances. The Macassa ore processing mill, although fifty years old, has been generally in compliance until 1986. In late 1985, effluent criteria were placed on their final discharge in the form of conditions on their Certificate of Approval for a tailings dam extension. Upon meeting with officials of the company, it was learned that plans are now underway for a new ore processing mill. We are currently working with the company to develop a method to prevent channelling that is presently occurring, in the tailings ponds, during the winter months.

One of two bioasssays conducted in 1986 indicated the effluent to have been non-acutely lethal to test fish while the second determined the effluent as toxic. Statistically, it would take 54.3% effluent to kill 50% of the test fish after the four days exposure.

IMIS NUMBER: 0001410000 SIC CODE: 052 MOE REGION: Northeast DISTRICT: Timmins

10/06/87

000141-00-0(0) LAC MINERALS (MACASSA DIV.) KIRKLAND LAKE REPORT DATE: 29 JUL 87

CONTROL POINT: 0100 DATA FOR 1986

CONCENTRATION PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
CYANIDE AVAIL	ACTUAL	3	6	5.02	4.4	0.48	0.5	7.38	1.8	0.82	2.25	6.05	6.97	3.72	
MG/L AS HCN	GUIDELINE	2	2	2	2	2	2	2	2	2	2	2	2	2	8
COPPER UNF.TOT.	ACTUAL	0.66	1.14	0.78	1.37	0.5	0.1	0.1	0.1	0.1	0.17	0.98	1.5	0.63	
MG/L AS CU	REQUIREMENT	1	1	1	1	1			1		1	1	1	1	3
PH	ACTUAL	8.08	7.75	8.09	7.98	8.27	8.16	8.23	7.83	7.89	7.7	7.92	8.05	8.00	
(PH)	GUIDELINE														
RESIDUE PARTIC.	ACTUAL	5.25	12.25	4.6	5	5.25	11.5	20.8	8.2	9.96	7.2	5.6	2.85	8.21	
MG/L (RSP)	GUIDELINE	15	15	15	15	15	15	15	15	15	15	15	15	15	1

NOTE: PH LIMIT 5.5-10.6, 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: MacMillan Bloedel Limited, Sturgeon Falls Division, Sturgeon Falls

INDUSTRIAL SECTOR: Pulp and Paper

RECEIVING WATERBODY: DIRECT: Sturgeon River to Lake Nipissing to French River Main Channel
INDIRECT: 124 km to Lake Huron (Georgian Bay)

DESCRIPTION OF ACTIVITY: Two different processes are used on softwoods (Red and White pine) and hardwood (Maple, Poplar, Birch). Chips are thermal refined and glued to form hard-board. Chips are converted by the neutral sulphite semi-chemical process into corrugating medium.

EFFLUENT QUALITY: Contains suspended solids (bark, wood, pulp) and dissolved organics.

EFFLUENT TREATMENT: Primary clarifier removes suspended solids. An anaerobic secondary treatment process is under development to reduce organics as measured by BOD.

DISCHARGE TYPE: Continuous, seven days a week; three separate outfalls (clean water effluents, spent liquor and clarifier).

COMMENTS:

BOD not in compliance. Suspended solids monthly average in compliance. Loading requirements are based on the Control Order limit for suspended solids. BOD reduction is to be at the maximum degree practicable by 1990.

The mill's discharge is normally toxic to fish. A bioassay conducted in 1986 indicated that it would take, statistically, 10.0% effluent to kill 50% of the test fish after four days exposure.

IMIS NUMBER: 0001530005 SIC CODE: 271 MOE REGION: Northeast DISTRICT: North Bay

26/08/87

0001S3-00-0(S) MACMILLAN BLOEDEL LIMITED STURGEON FALLS DIV REPORT DATE: 30 JUL 87

CONTROL POINT: 0700 DATA FOR 1986

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	10593.00	10340.00	10673.00	9665.00	9069.00	9432.00	10936.00	10825.00	11945.00	11991.00	11615.00	10819.00	10658.60	
M3 /DAY (FTFLOW)	GUIDELINE														
BOD 5 DAY	ACTUAL	47400.00	46480.00	45700.00	46240.00	37720.00	27550.00	38150.00	31580.00	34120.00	37380.00	33380.00	36080.00	38481.60	
KG /DAY (BOD5)	REQUIREMENT	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	12
RESIDUE PARTIC.	ACTUAL	2290.00	2410.00	2660.00	2560.00	2760.00	3000.00	2240.00	2090.00	2440.00	2620.00	2570.00	2510.00	2512.50	
KG /DAY (RSP)	REQUIREMENT	3300.00	3300.00	3300.00	3300.00	3300.00	3300.00	3300.00	3300.00	3300.00	3300.00	3300.00	3300.00	3300.00	

NOTE: PH LIMIT 5.5-10.6. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1985

COMPANY NAME & PLANT LOCATION: Malette Kraft Pulp and Paper (formerly: Abitibi-Price Inc.- Smooth Rock Falls Division) Smooth Rock Falls

INDUSTRIAL SECTOR: Pulp and Paper Mill

RECEIVING WATERBODY: DIRECT: Mattagami R.
INDIRECT: Moose R. to James Bay

DESCRIPTION OF ACTIVITY: Softwood (Black spruce, Jack pine, Balsam fir) is converted by the bleached kraft processes into market kraft pulp.

EFFLUENT QUALITY: Contains suspended organic compounds from pulping process. Also contains chemicals that affect the alkalinity of the receiver.

EFFLUENT TREATMENT: Raw suspended solids waste loads are reduced in the mill by recovery systems for wet bark, reject knots from unbleached pulp and bleached fibre from spills. A steam stripper removes organic compounds (some odourous) from condensates. The total mill effluent passes through a primary clarifier, a settling pond and a foam pond.

DISCHARGE TYPE: Continuous diffuser to Mattagami R.

COMMENTS:
In 1986 while under the Control Order the following limits were exceeded: a) BOD - 30 day operating day rolling average limit of 10 tonnes (10,000 kg) - 8 exceedances were attributed to inefficient production equipment. b) Suspended Solids - daily limit of 9.0 tonnes (9,000 kg) - 1 exceedance attributed to improper equipment maintenance procedures. In 1986 eight compliance samples were taken with the results indicating that the Control Limits were being met at those times. Control Order issued August 7, 1985, and set BOD and TSS limits. The Control Order has daily and 30 consecutive day limits imposed for BOD and TSS for the final effluent.

Bioassays conducted in 1986 indicated the final effluent was toxic to fish. Three bioassays estimated that it would take , statistically, 49.5%, 37.4% and 22.6% effluent to kill 50% of the test fish by the end of the four days exposure.

IMIS NO.: 0000860502 SIC CODE: 271 MOE REGION: Northeast DISTRICT: Timmins

10/06/87

000086-05-0(2) MALETTE PULP AND PAPER INC. REPORT DATE: 25 JUN 87

CONTROL POINT: 0400 DATA FOR 1986

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	46622.00	48558.00	50099.00	49452.00	52273.00	60601.00	62155.00	60251.00	55289.00	55329.00	47836.00	45517.00	52831.00	
M3 /DAY (FTFLOW)	GUIDELINE														
BOD 5 DAY	ACTUAL	7500.00	8600.00	8600.00	6200.00	8600.00	7900.00	7900.00	7200.00	7200.00	2500.00	5100.00	7300.00	7050.00	
KG /DAY (BOD5)	REQUIREMENT	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	8
RESIDUE PARTIC.	ACTUAL	1800.00	2300.00	2200.00	2100.00	2000.00	2600.00	4600.00	3800.00	2500.00	6600.00	2100.00	2400.00	2916.66	
KG /DAY (RSP)	REQUIREMENT	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	1

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Mattabi Mines Ltd. INDUSTRIAL SECTOR: Metal Mining, Smelting, Refining
& PLANT LOCATION: Sturgeon Lake Area, District of Kenora

RECEIVING WATERBODY: DIRECT: Bell River, Sturgeon Lake
INDIRECT: English River

DESCRIPTION OF ACTIVITY: Crushed ore is milled into zinc concentrate

EFFLUENT QUALITY: Contains dissolved metals of copper, zinc, lead, lead etc.

EFFLUENT TREATMENT: Tailings decant is limed for metals precipitation, metal hydroxide precipitates are settled, clearwater recycled to mill process, excess water relimed and precipitates settled, decant effluent discharged.

DISCHARGE TYPE: continuous

COMMENTS:

Floc was carried over from the tertiary treatment pond in 1986. In 1987 the pond was dredged and the increased residence has eliminated carry over. This effluent goes into a cattail swamp before the surface water reaches the Bell River. During the loading of zinc concentrates into railroad hopper cars, some of this metallic dust was airborne into the yard. Runoff would wash this material into the Mine Creek. This flow has been diverted into the concentrator. The hopper cars are now covered to prevent this from happening.

Effluents were sampled four times in 1986 and tested by aerated 96-hour rainbow trout assays: for mine creek, LC50's ranged from 1.2% to 10.0%; for tertiary effluent, LC50's ranged from 29.1% to 80.6%.

IMIS NO.: SIC CODE: MOE REGION: Northwest DISTRICT: Kenora

05/06/87

MATTABI MINES LTD.

REPORT DATE: 05 AUG 87

CONTROL POINT: TERTIARY EFFLUENT/RECLAIM OVERFLOW

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	NA	NA	NA	9000	17700	7200	13500	17200	16400	16400	11400	9800	13500	
M3 /DAY (FTFLOW)	GUIDELINE														
IRON UNF.TOT.	ACTUAL	0.62	0.97	1.05	1.18	0.58	0.4	0.37	0.17	0.24	0.22	0.16	0.25	0.54	
MG/L (FEUT)	GUIDELINE	1	1	1	1	1	1	1	1	1	1	1	1	1	2
PH	ACTUAL	10.9	10.6	11.2	10.3	10.8	11.1	10.8	10.9	9.9	10.5	10.8	10.5	10.7	
(PH)	GUIDELINE														7
ZINC UNF.TOT.	ACTUAL	NA	NA	NA	10.170	8.850	3.024	7.695	6.536	9.512	4.264	1.482	1.470	8.235	
KG/D (ZNUT)	GUIDELINE				9	17.7	7.2	13.5	17.2	16.4	16.4	11.4	9.8	13.5	1
CONTROL POINT: MINE CREEK															
IRON UNF.TOT.	ACTUAL	0.15	0.14	0.1	0.19	0.25	0.12	0.34	0.08	0.17	0.09	0.07	0.07	0.15	
MG/L (FEUT)	GUIDELINE	1	1	1	1	1	1	1	1	1	1	1	1	1	
PH	ACTUAL	6.6	6.8	6.9	6.4	6.3	6.6	6.2	6.4	6.3	6.6	6.8	6.6	6.5	
(PH)	GUIDELINE														
ZINC UNF.TOT.	ACTUAL	11.95	8.71	9.91	13.12	6.81	3.26	8.41	10.66	11.44	10.71	9.25	9.21	9.49	
MG/L (ZNUT)	GUIDELINE	1	1	1	1	1	1	1	1	1	1	1	1	1	12

NOTE: PH LIMIT 5.5-10.6. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Mitsubishi Canada Inc. INDUSTRIAL SECTOR:
& PLANT LOCATION: Midland

RECEIVING WATERBODY: DIRECT: Wye River
INDIRECT: Lake Huron (Georgian Bay)

DESCRIPTION OF ACTIVITY: Manufactures television tubes.

EFFLUENT QUALITY: Contains trace organics

EFFLUENT TREATMENT:

DISCHARGE TYPE: Continuous

COMMENTS:

In compliance. Certificate of Approval limits fluoride discharge to 141 kg per four week period. New Certificate of Approval for expansion will specify loadings and increased monitoring.

IMIS NUMER: 0001880004 SIC CODE: 334 3399 MOE REGION: Central DISTRICT: Barrie

03/06/87

000188-00-0(4) MITSUBISHI ELECTRONICS INDUSTRIES CANADA INC
CONTROL POINT: 0200 DATA FOR 1986

REPORT DATE: 25 JUN 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	4.21	4.20	4.20	3.33	3.76	4.05	4.26	3.91	4.23	4.33	4.31	4.46	4.10	
M3 /DAV (FTFLOW)	GUIDELINE														
CHROMIUM +6	ACTUAL	0.0002	0.0002	0.0001	0.0001	0.0002	0.0002	0.0004	0.0002	0.0004	0.0004	0.0004	0.0006	0.0003	
KG/D (CR6UR)	GUIDELINE	0.0042	0.0042	0.0042	0.0033	0.0038	0.0040	0.0043	0.0039	0.0042	0.0043	0.0043	0.0045	0.0041	
FLUORIDE UNF.TOT.	ACTUAL	0.024	0.020	0.020	0.013	0.016	0.017	0.017	0.015	0.016	0.013	0.012	0.015	0.017	
KG/D (FFIDUT)	REQUIREMENT	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	
PH	ACTUAL	7.78	7.8	7.58	7.6	7.7		7.3			7.54			7.61	
(PH)	GUIDELINE														
RESIDUE FILTERED	ACTUAL	0.0959	0.0235	0.0349	0.0290	0.0387	0.0566	0.0919	0.1484	0.1397	0.0736	0.0906	0.0759	0.0740	
KG/D (RSF)	GUIDELINE														
RESIDUE TOTAL	ACTUAL	2.19	2.43	2.45	1.51	1.75	1.93	1.49	1.42	1.71	1.61	1.57	1.79	1.82	
KG/D (RST)	GUIDELINE														

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE, S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Nestle
& PLANT LOCATION: Chesterville

INDUSTRIAL SECTOR: Food and beverage

RECEIVING WATERBODY: DIRECT: South Nation R.
INDIRECT: Ottawa R.

DESCRIPTION OF ACTIVITY:

EFFLUENT QUALITY: Contains suspended solids (insoluble organics) and food organics

EFFLUENT TREATMENT: Secondary treatment with 4 month aeration lagoon.

DISCHARGE TYPE: Continuous - except from May 15 to Sept. 15

COMMENTS:

Company in non-compliance for phosphorus. Company submitting applications for approval of phosphorus removal equipment; at the same time they are eliminating phosphate detergents used in the plant.

IMIS NUMER: 0000900001 SIC CODE: 1089 MOE REGION: Southeast DISTRICT: Cornwall

03/06/87

000090-00-0(1) NESTLE
CONTRO_ POINT: 0100 DATA FOR 1986
REPORT DATE: 20 JUN 87

CONCENTRATION PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	1202	750	1743	1388	1781	343	0	0	0	1082		495	798.545	
M3 /DAY (FTFLOW)	GUIDELINE														
BOD 5 DAY	ACTUAL	0	8	56	21	16	5	0	0	0	2		9	10.6363	
KG /DAY (BOD5)	REQUIREMENT	-	-	-	-	-	-	-							
PHOSPHOR UNF.TOT.	ACTUAL	19.232	13.5	27.888	26.372	56.992	10.633	0	0	0	16.23		4.95	11.09306	
KG/D (PPUT)	GUIDELINE	1.202	0.75	1.743	1.388	1.781	0.343	0	0	0	1.082		0.495	0.798545	9
RESIDUE PARTIC.	ACTUAL	0.248	0.153	0.1696	0.228	0.512	0.434	0	0	0	0.06	0.029*	0.07	0.104881	
KG/D (RSP)	GUIDELINE	18.03	11.25	26.145	20.82	26.715	5.145	0	0	0	16.23		7.425	11.97817	

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Nitrochem Inc. Maitland

INDUSTRIAL SECTOR: Inorganic Chemicals

RECEIVING WATERBODY: DIRECT: St. Lawrence River
INDIRECT:

DESCRIPTION OF ACTIVITY: Nitric acid and different grades of ammonia based fertilizer are made.

EFFLUENT QUALITY: Contains nitrogenous wastes.

EFFLUENT TREATMENT: Equalization pond to go into new aquachemical treatment unit for reclamation of nitrogenous wastes.

DISCHARGE TYPE: Continuous

COMMENTS:

Kjeldahl Nitrogen, Nitrates and Nitrites not in compliance. New aquachemical unit being installed in spring 1986. Completion expected in mid 1987. Equalization pond and sewer segregation complete.

IMIS NUMBER: 0001710003 SIC CODE: 372 MOE REGION: Southeast DISTRICT: Kingston

03/06/87

S U M M A R Y FOR EMIS. TYPE: 04 FINAL DISCHARGE - GROSS DATA DISCHARGED INTO: 02/005/ ST. LAWRENCE R.

INCLUDES CONTROL POINTS: 0100 0200

DATA FOR 1986 000171-00-0(3) NITROCHEM

REPORT DATE: 20 JUNE 87

FLOW/LOADING	PARAMETERS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	2690	3020	2800	2670	3180	3200	2040	2240	2640	2530	2210	2110	2610.83	
M3 /DAY (FTFLOW)	GUIDELINE														
KJELDAHL ORGANIC	ACTUAL	1588	1519	1745	1401	1507	956	874	1175	1174	1096	1038	1024	1258.08	
KG /DAY (NNKUR)	REQUIREMENT	134.5	151	140	133.5	159	160	102	112	132	126.5	110.5	105.5	130.5415	12
NO2+NO3N UNF.REAC	ACTUAL	829	827	998	739	844	631	587	708	736	771	524	563	729.75	
KG /DAY (NNOTUR)	REQUIREMENT	53.8	60.4	56	53.4	63.6	64	40.8	44.8	52.8	50.6	44.2	42.2	52.2166	12
PO4 FIL.REAC	ACTUAL	0.8	0.9	0.77	0.9	1	1.2			1.4	0.9	0.6	0.6	0.906998	
KG /DAY (PPO4FR)	GUIDELINE														

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Noranda Inc., Lyon Lake Division — Sturgeon Lake Area, District of Thunder Bay

INDUSTRIAL SECTOR: Metal Mining , Smelting, Refining

RECEIVING WATERBODY: DIRECT: Lyon Lake
INDIRECT: English River

DESCRIPTION OF ACTIVITY: Ore is removed from underground and open pit for zinc recovery at Mattabi Mines Ltd.

EFFLUENT QUALITY: Treated minewater contains dissolved metals of copper, zinc, lead, etc.

EFFLUENT TREATMENT: Lime precipitation of dissolved metals, settling of metal hydroxide precipitates.

DISCHARGE TYPE: continuous decanting

COMMENTS:

During 1986 it was discovered that the effluent flow was short circuiting in the two pond treatment system. The flow pattern was improved in these ponds and a tertiary pond was added in 1987. To eliminate floc carry over, dredging of the settled material is being considered.

The final effluent was sampled three times in 1986 and tested by aerated 96-hour rainbow trout assays: samples had LC50's of 26.8%, 16.9%, and 45.6%.

IMIS NO.: 0042110106 SIC CODES: 0592, 0594 MOE REGION: Northwest DISTRICT: Kenora

17/07/87

004211-01-0(6) NORANDA INC
CONTROL POINT: 0100 DATA FOR 1986

REPORT DATE: 05 AUG 87

CONCENTRATION PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	NA	NA	NA	818	818	818	818	818	818	818	818	818	818	
M3 /DAY (FTFLOW)	GUIDELINE														
IRON UNF.TOT.	ACTUAL	0.75	0.96	0.89	0.27	1.04	0.5	0.12	0.06	0.14	0.34	0.49	0.83	0.52	
MG/L (FEUT)	GUIDELINE	1	1	1	1	1	1	1	1	1	1	1	1	1	1
PH	ACTUAL	9.9	9.3	9.7	9.9	8	6.9	7.3	6.7	7	7.4	8.5	8.1	8.2	
(PH)	GUIDELINE														
ZINC UNF.TOT.	ACTUAL	0.89	1.29	1.35	0.24	1.64	1.3	0.75	0.77	1	1.16	1.64	3.45	1.26	
MG/L (ZNUT)	GUIDELINE	1	1	1	1	1	1	1	1	1	1	1	1	1	7

NOTE: PH LIMIT 5.5-10.6. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Noranda-Hemlo Inc. Marathon

INDUSTRIAL SECTOR: Metal Mining, Smelting, Refining

RECEIVING WATERBODY: DIRECT : Lim Lake
INDIRECT: Lake Superior

DESCRIPTION OF ACTIVITY: Gold mining and milling.

EFFLUENT QUALITY: Heavy metals, suspended solids, pH, cyanide.

EFFLUENT TREATMENT: Approved treatment utilizing copper sulphate and ferric sulphate in addition to cyanide oxidation of effluent. Disposal area decant to Lim Lake. Mill site sedimentation pond effluent to Cedar Creek.

DISCHARGE TYPE: continuous

COMMENTS:

Two minor guideline exceedances were recorded during 1986, copper in January and nickel in September. The treatment plant is new and process modifications are being examined.

Three of the six effluent bioassays conducted in 1986 were non-acutely lethal to test fish; the other three indicated the effluent to have been toxic ; statistically, requiring 24%, 23% and 67.5% effluent to kill 50% of the test fish within four days exposure.

IMIS NUMBER: 0042110205 SIC CODE: 0592 MOE REGION: Northwest DISTRICT: Thunder Bay

25/08/87

004211-02-0(5) NORANDA HEMLO INC.
CONTROL POINT: 0100 DATA FOR 1986

REPORT DATE: 05 AUG 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	180635	142276	144576	94122		62855	111792	135655	183069				131873	
M3 /DAY (FTFLOW)	GUIDELINE														
ARSENIC UNF.TOT.	ACTUAL	0.181	0.142	0.145	0.094		0.063	0.112	0.136	0.183				0.132	
KG/D (ASUT)	GUIDELINE	90.318	71.138	72.288	47.061		31.428	55.896	67.828	91.535				65.937	
CYANIDE FREE	ACTUAL	42.991	6.545	8.530	3.953		5.280	72.888	8.953	50.527				24.116	
KG/D (CCNFUR)	GUIDELINE														
COPPER UNF.TOT.	ACTUAL	70.448	9.959	7.952	4.894		2.200	12.856	16.821	21.968				15.841	
KG/D (CUUT)	GUIDELINE	54.191	42.683	43.373	28.237		18.857	33.538	40.697	54.921				39.562	1
IRON UNF.TOT.	ACTUAL	166.184	76.829	38.313	16.754		11.880	33.985	95.230					58.363	
KG/D (FEUT)	GUIDELINE	180.635	142.276	144.576	94.122		62.855	111.792	135.655					131.873	
MERCURY UNF.TOT.	ACTUAL		0.000	0.000	0.000		0.000	0.001		0.001				0.000	
UG/L (HGUT)	GUIDELINE														
NICKEL UNF.TOT.	ACTUAL		3.984	6.506				7.266	14.651	250.605				42.621	
KG/D (NIUT)	GUIDELINE		142.276	144.576				111.792	135.655	183.069				131.873	1
LEAD UNF.TOT.	ACTUAL		1.423	1.446					1.357					1.319	
KG/D (PBUT)	GUIDELINE		142.276	144.576					135.655					131.873	
PH	ACTUAL	9.890	9.660	8.680	8.100		8.140	8.040	7.940	7.970				8.552	
(PH)	GUIDELINE														
RESIDUE PARTIC.	ACTUAL	740.604	412.600	151.805	154.360		118.796	223.025	328.014	382.614				298.082	
KG/D (RSP)	GUIDELINE	2709.525	2134.140	2168.640	1411.830		942.825	1676.880	2034.825	2746.035				1978.095	
ZINC UNF.TOT.	ACTUAL	1.806	1.423	1.446	0.941		0.629	1.118	1.357	1.831				1.319	
KG/D (ZNUT)	GUIDELINE	90.318	71.138	72.288	47.061		31.428	55.896	67.828	91.535				65.937	

NOTE: PH LIMIT 5.5-10.6. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Noranda Mines Ltd. GECO Div. Manitouwadge

INDUSTRIAL SECTOR: Metal Mining, Smelting, Refining

RECEIVING WATERBODY: DIRECT: Black R. to Pic R.
INDIRECT: 154 km to Lake Superior

DESCRIPTION OF ACTIVITY: Base metal mining.

EFFLUENT QUALITY: Contains suspended solids, heavy metals, and ammonia.

EFFLUENT TREATMENT: pH adjustment and clarification of metal precipitates from tailing area and seepage.

DISCHARGE TYPE: Continuous

COMMENTS:

The following is a list of guideline non-compliance. Suspended Solids not in compliance (January, March, May to December). [Treated effluent (as reported) discharged to a swamp for further polishing.] Copper not in compliance (January, March to December). Zinc not in compliance (January, July). Total metals not in compliance (January, July, November). A study is being conducted to determine abatement measures to be implemented.

The final effluent is normally toxic to fish. Three bioassays conducted in 1986, indicated that it would require, statistically, 10%, 9.3% and 13.0% effluent to kill 50% of the test fish with a four day exposure.

IMIS NUMBER: 0001800002 SIC CODE: 0592 MOE REGION: Northwest DISTRICT: Thunder Bay

25/08/87

000180-00-0(2) NORANDA MINES LIMITED GECD DIV. REPORT DATE: 05 AUG 87
CONTROL POINT: 0100 DATA FOR 1986

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	994	497	2244	5142	5502	4763	3952	3945	3631	4881	4514	4187	3687.66	
M3 /DAV (FTFLOW)	GUIDELINE														
ACIDITY TOTAL	ACTUAL	0	0	0	0	0	0							0	
KG/D (ACDT)	GUIDELINE														
ALK TOTAL	ACTUAL	0	0	0	0	0	0							0	
KG/D AS CACO3	GUIDELINE														
ARSENIC UNF.TOT.	ACTUAL	0	0	0	0	0	0							0	
KG/D (ASUT)	GUIDELINE														
CYANIDE FREE	ACTUAL	0	0	0	0	0	0							0	
KG/D (CCNFUR)	GUIDELINE														
COPPER UNF.TOT.	ACTUAL	0.706	0.099	0.718	1.903	1.981	3.382	2.806	1.381	1.489	2.880	3.792	2.428	1.89	
KG/D (CUUT)	GUIDELINE	0.2982	0.1491	0.6732	1.5426	1.6506	1.4289	1.1856	1.1835	1.0893	1.4643	1.3542	1.2561	1.106	11
IRON UNF.TOT.	ACTUAL	2.545	0.298	1.818	3.137	6.933	4.287	15.689	3.235	4.030	6.296	6.139	5.359	5.092	
KG/D (FEUT)	GUIDELINE	0.994	0.497	2.244	5.142	5.502	4.763	3.952	3.945	3.631	4.881	4.514	4.187	3.688	7
HARDNESS TOTAL	ACTUAL	0	0	0	0	0	0							0	
KG/D (HARDT)	GUIDELINE														
MERCURY UNF.TOT.	ACTUAL	0	0	0	0	0	0							0	
KG/L (HGUT)	GUIDELINE														
NICKEL UNF.TOT.	ACTUAL	0	0	0	0	0	0							0	
KG/D (NIUT)	GUIDELINE														
NH3-N FIL.REAC	ACTUAL	47.712	31.311	116.688	254.015	303.986	266.728	-	370.83	305.004	375.837	365.634	314.025	250.960	
KG/D (NNH3FR)	GUIDELINE														
LEAD UNF.TOT.	ACTUAL	0	0	0	0	0	0							0	
KG/D (PBUT)	GUIDELINE														
PH	ACTUAL	9.1	9	9	9.2	9.3	9.3	9.2	8.9	9.1	9	9.1	9	9.100	
(PH)	GUIDELINE														
RESIDUE PARTIC.	ACTUAL	33.448	5.880	41.290	75.433	89.077	79.352	83.348	104.819	57.987	148.675	125.218	88.220	78.147	
KG/D (RSP)	GUIDELINE	14.91	7.455	33.66	77.13	82.53	71.445	59.28	59.175	54.465	73.215	67.71	62.805	55.315	10
ZINC UNF.TOT.	ACTUAL	0.537	0.084	0.359	0.720	2.146	0.810	2.450	0.789	0.908	0.976	0.903	0.921	1.002	
KG/D (ZNUT)	GUIDELINE	0.497	0.2485	1.122	2.571	2.751	2.3815	1.976	1.9725	1.8155	2.4405	2.257	2.0935	1.844	2

NOTE: PH LIMIT 5.5-10.6, 0* INDICATES INTAKE EXCEEDED DISCHARGE, S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Northern Wod Preservers
& PLANT LOCATION: Thunder Bay

INDUSTRIAL SECTOR: Wood Preserving

RECEIVING WATERBODY: DIRECT: Thunder Bay Harbour
INDIRECT: Lake Superior

DESCRIPTION OF ACTIVITY: Timber, ties and utility poles are treated with creosote or pentachlorophenol preservative.

EFFLUENT QUALITY: Effluent contains low levels of phenols, pentachlorophenol and traces of dioxin.

EFFLUENT TREATMENT: Secondary activated sludge.

DISCHARGE TYPE: continuous subsurface

COMMENTS:

A total of six exceedances were recorded during 1986, five for total phenols and one for suspended solids.
Control Order under development.

Two of three trout bioassays conducted in 1986 indicated the final effluent was not acutely lethal to test fish. The third assay indicated that it would take, statistically, 45.6% effluent to kill 50% of the test fish after the four day exposure.

IMIS NO.: 0001820000 SIC CODES: 251, 2591 MOE REGION: Northwest DISTRICT: Thunder Bay

25/08/87

000182-00-0(0) NORTHERN WOOD PRESERVERS

REPORT DATE: 05 AUG 87

CONTROL POINT: 0100 DATA FOR 1986

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	13	13	13	13	13	13	13	13	13	13	13	13	13	
M3 /DAY (FTFLOW)	GUIDELINE														
PHENOLS UNF-REAC	ACTUAL	0.000702	0.053423	0.000297	0.000192	0.000386	0.000176	0.000678	0.000231	0.000105	0.000059	0.000067	0.000044	0.0047	
KG/D PHENOL	GUIDELINE	0.00026	0.00026	0.00026	0.00026	0.00026	0.00026	0.00026	0.00026	0.00026	0.00026	0.00026	0.00026	0.00026	5
RESIDUE PARTIC.	ACTUAL	0.190671	0.069329	0.2145	0.12675	0.0585	0.0104	0.021671		0.063375	0.055614	0.0195	0.143	0.088	
KG/D (RSP)	GUIDELINE	0.195	0.195	0.195	0.195	0.195	0.195	0.195		0.195	0.195	0.195	0.195	0.195	1
PENTACHLOROPHENOL	ACTUAL	0.00003	0.00004	0.00003	0.00006	0.0001	0.00014	0.0001	0.000003	0.00002	0.000008		0.000001	0.00005	
KG/D (X3PCPH)	REQUIREMENT	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013		0.013	0.013	

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Norton Company
& PLANT LOCATION: Niagara Falls

INDUSTRIAL SECTOR: Industrial Minerals

RECEIVING WATERBODY: DIRECT: Welland River to Niagara River
INDIRECT:

DESCRIPTION OF PROCESS: Abrasive oxides are manufactured in electric arc furnaces.

EFFLUENT QUALITY: There are 4 discharges to the Welland River; results are a composite of all discharges.

EFFLUENT TRATMENT: Oil water separation, pH adjustment and solids precipitation on product process waste water are carried out.

DISCHARGE TYPE: continuous through a submerged outfall

COMMENTS:

Loadings are summation of all four sewer discharges; company is in compliance with monthly average.

IMIS NUMBER: 0001650001 SIC CODE: 357 MOE REGION: West Central DISTRICT: Welland

10/06/87

000165-00-0(1) NORTON COMPANY NIAGARA FALLS
S U M M A R Y FOR EMIS. TYPE: 16 FINAL DISCHARGE - NET DATA DISCHARGED INTO: 02/004/5130 TWELVE MILE CR.
INCLUDES CONTROL POINTS: 0100 0200 0300 0400
DATA FOR 1986

FLOW/LOADING	PARAMETERS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	13734	13734	13734	13734	13734	13734	13734	13734	13734	13734	13080	7521	13161.7	
M3 /DAY (FTFLOW)	GUIDELINE														
PH	ACTUAL	6.53332	6.73332	6	6.23332	7.06666	7.53332	7.06666	4.975	6.96666	6.8	6.53333	6.86666	6.61	
(PH)	GUIDELINE														
RESIDUE PARTIC.	ACTUAL	920.177	166.759	105.359	50	234.4	59.2	85.6	61.16	93.6	118.1	92.5	103.71	174.2	
KG /DAY (RSP)	GUIDELINE	206.01	206.01	206.01	206.01	206.01	206.01	206.01	206.01	206.01	206.01	196.2	112.815	197.4	2
SOLVENT EXTRACT.	ACTUAL		0	0	0					0			13.081	2.6	
KG /DAY (SOLEXT)	GUIDELINE		206.01	206.01	206.01					206.01			112.815	187.4	

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Ogilvie Mills Ltd. (Industrial Grain Products) Thunder Bay

INDUSTRIAL SECTOR: Food and beverage

RECEIVING WATERBODY: DIRECT: Kaministiquia River
INDIRECT: 3 km to Lake Superior (Thunder Bay)

DESCRIPTION OF ACTIVITY: Starch and gluten are separated from the grain.

EFFLUENT QUALITY: Contains suspended solids (wheat husk) and starches (glutens).

EFFLUENT TREATMENT: Secondary biological anaerobic / aerobic.

DISCHARGE TYPE: continuous surface

COMMENTS:

BOD not in compliance, due to treatment plant bypassing to avoid odour problems. Control Order limits BOD5 to 900 kg/day. Treatment plant is state-of-the-art for BOD effluent reduction. The company, with the concurrence of the Ministry, is continuing efforts to improve treatment plant operations. Due to an error in reporting method, the values listed for the suspended solids are incorrect. These values are pre-treatment figures. This error has been corrected for the reporting of 1987 data.

This discharge is toxic to fish. Two bioassays conducted in 1986 indicated that it would take, statistically, 13.0%, and 13.4% effluent to kill 50% of the test fish after four days exposure.

IMIS NUMBER: 0000880005 SIC CODE: 105 MOE REGION: Northwest DISTRICT: Thunder Bay

25/08/87

000088-00-0(5) OGILVIE MILLS LTD.
CONTROL POINT: 0100 DATA FOR 1986

REPORT DATE: 05 AUG 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	1020	1050	968	1029	1028	1009	986	1026	1073	1093	1053	985	1026.66	
M3 /DAV (FTFLOW)	REQUIREMENT														
BOD 5 DAY	ACTUAL	716	1070	1750	1840	1450	1020	726	665	953	795	904	781	1055	
KG /DAV (BOD5)	REQUIREMENT	900	900	900	900	900	900	900	900	900	900	900	900	900	7
RESIDUE PARTIC.	ACTUAL	15600	17230	17240	17460	17080	15820	14740	15540	15910	15780	15990	14780	16100	
KG/D (RSP)	GUIDELINE														

NOTE: PH LIMIT 5.5-9.5, 0* INDICATES INTAKE EXCEEDED DISCHARGE, S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Omstead Foods Ltd.
& PLANT LOCATION: Wheatley

INDUSTRIAL SECTOR: Food and Beverage

RECEIVING WATERBODY: DIRECT: Muddy Creek
INDIRECT: 1.0 km Lake Erie

DESCRIPTION OF ACTIVITY: Fish is processed and vegetables grown locally are processed/frozen.

EFFLUENT QUALITY: Contains fish and vegetable processing waste (BOD, suspended solids).

EFFLUENT TREATMENT: Extended aeration system.

DISCHARGE TYPE: continuous, when plant is operating, through an open outfall

COMMENTS:

Biochemical Oxygen Demand, Suspended Solids, and Phosphorus guidelines were not met during cold weather. Developing additional treatment is required to meet the guidelines. A Remedial Action Plan for Wheatley Harbour will define additional treatment required and timetable for installation. The RAP is to be completed in 1987.

IMIS NUMBER: 0001050004 SIC CODES: 102, 103, 1032 MOE REGION: Southwest DISTRICT: Windsor

26/08/87

000105-00-0(4) OMSTEAD FOODS LIMITED WHEATLEY REPORT DATE: 28 JUL 87

S U M M A R Y FOR EMIS. TYPE: 13 CLARIFIER EFFLUENT DISCHARGED INTO: 02/003/2280 MUDDY CR.

INCLUDES CONTROL POINTS: 0100 0200

DATA FOR 1986

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	2122	969.93	1986	2778	1878.9	2122	4756	6335	8037	8196	7396	2143	4060	
M3 /DAY (FTFLOW)	GUIDELINE														
BOD 5 DAY	ACTUAL	315	21.74	21.54	25.88	11.82	11.52	22.97	32.3	63.49	46.6	121.2	35.4	60.8	
KG /DAY (BOD5)	GUIDELINE	31.83	14.55	29.79	41.67	28.18	31.83	71.34	95.03	120.56	122.94	110.94	32.15	60.9	4
NH3-N TOTAL	ACTUAL	14.3	5.3	48.98	86.46	1.4	1.37	5.44	3.86	9.68	12.3	1.1	0.3	15.9	
KG /DAY (NNHTUR)	GUIDELINE	21.22	9.70	19.86	27.78	18.79	21.22	47.56	63.35	80.37	81.96	73.96	21.43	40.6	2
PHOSPHOR UNF.TOT.	ACTUAL	20.9	2.78	2.62	5.12	0.79	2.12	0.88	5.04	5.84	4	5.3	0.9	4.7	
KG /DAY (PPUT)	GUIDELINE	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	5
RESIDUE PARTIC.	ACTUAL	212	37.93	0.94	24.3	13.3	29.5	35.29	63.61	83.28	128.9	298.2	179.3	92.2	
KG /DAY (RSP)	GUIDELINE	31.83	14.55	29.79	41.67	28.18	31.83	71.34	95.03	120.56	122.94	110.94	32.15	60.9	5

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Ontario Hydro
Lambton TGS
Courtright

INDUSTRIAL SECTOR: Electric Power Generation

RECEIVING WATERBODY: DIRECT: St. Clair River
INDIRECT:

DESCRIPTION OF ACTIVITY: Coal is burned

EFFLUENT QUALITY: Hot water

EFFLUENT TREATMENT:

DISCHARGE TYPE: Continuous (once through condenser cooling water).

COMMENTS:

Marginal exceedance of temperature rise guideline by 0.6 degrees Celsius for 6 hours occurred in January due to insufficient cooling water capacity.

IMIS NUMBER: SIC CODE: 572 MOE REGION: Southwest DISTRICT: Sarnia

24/07/87

ONTARIO HYDRO LAMBTON TGS

REPORT DATE: 23 JUL 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	% OF OPERATING HOURS EXCEEDED
FLOW MILLION M3/DAY	ACTUAL	89	94.8	98	61.4	61.3	82.6	63.3	63.5	49.8	48.2	65.4	88.1	72.1	
	GUIDELINE														
TEMPERATUTRE RISE (MAX.)	ACTUAL	17.3	16.4	13.9	14.1	13.7	13.5	13.4	11.5	13.4	13.3	14.9	13.1	14	
	GUIDELINE	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	16.7	0.068
MAX. EFFLUENT TEMPERATURE	ACTUAL	17.5	16.7	16.7	19.4	24.2	29.7	32.3	33.5	32.9	31	23.8	18.8	24.7	
	GUIDELINE	32.5	32.5	32.5	32.5	32.5	32.5	35	35	35	32.5	32.5	32.5	33.1	
RESIDUE PARTICULATE KG/D	ACTUAL	0	0*	0*	0*	158750	0	0*	63500	0	0	0*	0*		
	REQUIREMENT	1335000	1422000	1470000	921000	919500	1239000	949500	952500	747000	723000	981000	1321500		

0* - INTAKE EXCEEDED DISCHARGE

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Ontario Hydro
& PLANT LOCATION: Pickering N.P.G.D. Generating Stns. A & B
Pickering

INDUSTRIAL SECTOR: Electric Power Generation

RECEIVING WATERBODY: DIRECT: Lake Ontario
INDIRECT:

DESCRIPTION OF ACTIVITY: Nuclear Power

EFFLUENT QUALITY: Temperature

EFFLUENT TREATMENT: Dilution (once through condenser cooling water).

DISCHARGE TYPE: Continuous

COMMENTS:

In compliance.

IMIS NUMBER: 0001840106 (A) SIC CODE: 572 MOE REGION: Central DISTRICT: Toronto
0001840214 (B)

04/06/87

ONTARIO HYDRO PICKERING N.P.G.D
GENERATING STATIONS A&B

STATION A

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	% OF OPERATING HOURS EXCEEDED
FLOW MILLION M3/DAY	ACTUAL	5.24	5.01	4.68	4.2	5.32	4.78	4.28	4.24	4.94	5.12	5.14	5.4	4.86	
	GUIDELINE														
TEMPERATUTRE RISE (MAX.)	ACTUAL	10.1	9.2	8.6	7.5	10.2	8.3	6.8	6.8	10.1	10.4	10.4	7.6	8.83	
	GUIDELINE	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	
MAX. EFFLUENT TEMPERATURE	ACTUAL	16.8	15.6	15.1	15.3	20.3	22.1	24.6	23.7	24.7	21.6	18.8	13.9	19.4	
	GUIDELINE	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	

STATION B

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	% OF OPERATING HOURS EXCEEDED
FLOW MILLION M3/DAY	ACTUAL	9.54	9.9	10.92	11.24	10.35	10.73	111.01	11.24	11.48	11.34	11.58	11.58	10.91	
	GUIDELINE														
TEMPERATUTRE RISE (MAX.)	ACTUAL	9.2	9.57	9.53	9.17	7.42	9.003333	9.24	9.73	7.65	6.95	4.58	7.18	8.27	
	GUIDELINE	11	11	11	11	11	11	11	11	11	11	11	11	11	
MAX. EFFLUENT TEMPERATURE	ACTUAL	14.82	14.7	15.08	16.56	16.57	18.36	23.09	25.18	21.21	17.39	12.43	12.86	17.35	
	GUIDELINE	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	

0* - INTAKE EXCEEDED DISCHARGE

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Ontario Hydro (TGS) Nanticoke

INDUSTRIAL SECTOR: Electric Power Generation

RECEIVING WATERBODY: DIRECT: Lake Erie
INDIRECT:

PROCESS TYPE: Coal fired thermal generating station.

EFFLUENT QUALITY:

EFFLUENT TREATMENT: Primary and secondary ash settling cells, primary and secondary settling lagoons.

DISCHARGE TYPE: Continuous

COMMENTS:

Water quality data applies to effluent from ash lagoon only. Wastewater from lagoon is mixed with condensed cooling water prior to discharge. Exceedance in May for suspended solids loading caused by construction within the lagoon system.

IMIS NUMBER: 0001840008 SIC CODE: 572 MOE REGION: West Central DISTRICT: Haldimand-Norfolk/Brant

28/07/87

000184-00-0(8) ONTARIO HYDRO NANTICOKE TGS
CONTROL POINT: 0100 DATA FOR 1986
REPORT DATE: 28 JUL 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	52444.8	56505.6	58838.4	35078.4	23155.2	37411.2	33868.8	28598.4	42508.8	33004.8	37584	53136	41011.1	
M3 /DAY (FTFLOW)	REQUIREMENT														
CHROMIUM UNF.TOT.	ACTUAL	0	0	0	0	0	0	0.34	0	0.93	1.29	1.31	0.53	0.37	
KG /DAY (CRUT)	REQUIREMENT	5.24	5.65	5.88	3.51	2.32	3.74	3.39	2.86	4.25	3.30	3.76	5.31	4.10	
IRON UNF.TOT.	ACTUAL	0	0	0	0	0	0	1.69	0	0	0	0	2.66	0.36	
KG /DAY (FEUT)	REQUIREMENT	26.22	28.25	29.42	17.54	11.58	18.71	16.93	14.30	21.25	16.50	18.79	26.57	20.51	
PH	ACTUAL														
(PH)	GUIDELINE														
PHOSPHOR UNF.TOT.	ACTUAL	0	0	0	0	0.44	0	0.41	0	0	0.2	0.19	0.6	0.15	
KG /DAY (PPUT)	REQUIREMENT	5.2	5.7	5.9	3.5	2.3	3.7	3.4	2.9	4.3	3.3	3.8	5.3	4.10	
RESIDUE FILTERED	ACTUAL	25363	24890	22756	8410	5851	8790	9884	6345	11620	7286	12030	19370	13549.6	
KG /DAY (RSF)	GUIDELINE														
RESIDUE PARTIC.	ACTUAL	551	791	0	203	806	355	0	0	0	0	0	0	225.5	
KG /DAY (RSP)	REQUIREMENT	787	848	883	526	347	561	508	429	638	495	564	797	615	1
SULPHATE UNF.REAC	ACTUAL	10147	11119	11415	6300	4291	6321	5868	4645	6063	5753	7701	10250	7489.41	
KG /DAY (SSO4UR)	GUIDELINE														

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Ontario Hydro
& PLANT LOCATION: Nanticoke TGS
Nanticoke

INDUSTRIAL SECTOR: Electric Power Generation

RECEIVING WATERBODY: DIRECT: Lake Erie
INDIRECT:

DESCRIPTION OF ACTIVITY: Coal fired thermal generating station.

EFFLUENT QUALITY:

EFFLUENT TREATMENT:

DISCHARGE TYPE: Continuous (once through condenser cooling water).

COMMENTS:

* Nanticoke TGS Tempering Exemption in effect July 1, 1983, for a five year period.

IMIS NUMBER: 0001840008 SIC CODE: 572 MOE REGION: West Central DISTRICT: Haldimand-Norfolk/Brant

15/06/87

000184-00-0(8) ONTARIO HYDRO NANTICOKE TGS
CONTROL POINT: 0200 DATA FOR 1986
REPORT DATE: 25 JUN 87

CONCENTRATION PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	8883000	9887000	10830000	7332000	5772000	7841000	6529000	6250000	7414000	5322000	6410000	8701000	7598000	
M3 /DAY (FTFLOW)	GUIDELINE														
WATER TEMP	ACTUAL	8.8	8.9	7.4	9.5	11.5	14.7	22.7	23.2	22.4	17.8	14.2	2.9	13.67	
DEG.C (FWTEMP)	GUIDEL NE	35	35	35	35	35	35	35	35	35	35	35	35	35	
TEMP RISE	ACTUAL	8.2	7.7	5.8	3.6	2.8	4.4	5.4	5.4	5	4.8	6.8	6.5	5.53	
DEG.C (FWTINC)	GUIDELINE	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Ontario Hydro Bruce N.P.G.S. Domestic Sewage Treatment Plant Tiverton

INDUSTRIAL SECTOR: Electric Power Generation

RECEIVING WATERBODY: DIRECT: Lake Huron
INDIRECT:

DESCRIPTION OF ACTIVITY: Plant treats sanitary wastes from the generating station complex

EFFLUENT QUALITY: Contains phosphorus, BOD and suspended solids

EFFLUENT TREATMENT: Secondary sewage treatment with phosphorus removal.

DISCHARGE TYPE: Continuous to Douglas Point outfall.

COMMENTS:

In compliance. Reporting procedures at this time do not allow reporting of monthly data.

IMIS NUMBER: 0001840107 SIC CODE: 572 MOE REGION: Southwest DISTRICT: Owen Sound

000184-01-0(7) ONTARIO HYDRO BRUCE N.P.G.S
DOMESTIC SEWAGE TREATMENT PLANT
CONTROL POINT: 0100 DATA FOR 1986

REPORT DATE: 21 JUL 1987

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW MILLION M3/DAY														2310	
PHOSPHORUS TOTAL KG/DAY	ACTUAL REQUIREMENT													<2.00 2.31	
RESIDUE PARTICULATE KG/D	ACTUAL REQUIREMENT													11 34.7	
BIOCHEM. OXYGEN DEMAND (BOD5)	ACTUAL REQUIREMENT													6 34.7	

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Ontario Hydro
Bruce N.P.G.S. Generating Stns. A & B
Tiverton

INDUSTRIAL SECTOR: Electric Power Generation

RECEIVING WATERBODY: DIRECT: Lake Huron
INDIRECT:

DESCRIPTION OF ACTIVITY: Nuclear Power

EFFLUENT QUALITY: Temperature

EFFLUENT TREATMENT: Dilution (once through condenser cooling water).

DISCHARGE TYPE: Continuous

COMMENTS:

In compliance.

IMIS NUMBER: 0001840107 SIC CODE: 572 MOE REGION: Southwest DISTRICT: Owen Sound

OOD184-01-0(7) ONTARIO HYDRO BRUCE N.P.G.S
STATION A & B
CONTROL POINT: 0100 DATA FOR 1986

REPORT DATE: 21 JUL 1987

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	% OF OPERATING HOURS EXCEEDED
STATION A															
FLOW MILLION M3/DAY		5.24	5.01	4.68	4.2	5.32	4.78	4.28	4.24	4.94	5.12	5.14	5.4	4.86	
TEMPERATURE RISE (MAX) deg. C	ACTUAL	10.1	9.2	8.6	7.5	10.2	8.3	6.8	6.8	10.1	10.4	10.4	7.6	8.83	
	GUIDELINE	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	
MAX. EFFLUENT TEMPERATURE deg. C	ACTUAL	16.8	15.6	15.1	15.3	20.3	22.1	24.6	23.7	24.7	21.6	18.8	13.9	19.4	
	GUIDELINE	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	
STATION B															
FLOW MILLION M3/DAY		9.54	9.9	10.92	11.24	10.35	10.73	11.01	11.24	11.48	11.34	11.58	11.58	10.91	
TEMPERATURE RISE (MAX) deg. C	ACTUAL	9.2	9.57	9.53	9.17	7.42	9	9.24	9.73	7.65	6.95	4.58	7.18	8.27	
	GUIDELINE	11	11	11	11	11	11	11	11	11	11	11	11	11	
MAX. EFFLUENT TEMPERATURE deg. C	ACTUAL	14.82	14.7	15.08	16.56	16.57	18.36	23.09	25.18	21.21	17.39	12.43	12.86	17.35	
	GUIDELINE	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Ontario Hydro Bruce N.P.G.S.
Heavy Water Plant
Tiverton

INDUSTRIAL SECTOR: Electric Power Generation

RECEIVING WATERBODY: DIRECT: Lake Huron
INDIRECT:

DESCRIPTION OF ACTIVITY: Heavy water is produced for use in nuclear reactors.

EFFLUENT QUALITY: Temperature and dissolved hydrogen

EFFLUENT TREATMENT: Continuous

DISCHARGE TYPE:

COMMENTS:

In compliance.

IMIS NUMBER: 0001840107 SIC CODE: 572 MOE REGION: Southwest DISTRICT: Owen Sound

000184-01-0(7) ONTARIC HYDRO BRUCE N.P.G.S HEAVY WATER PLANT
CONTROL POINT: 0100 DATA FOR 1986

REPORT DATE: 21 JUL 1987

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	HOURS EXCEEDED	TOTAL EXCEEDANCES
FLOW MILLION M3/DAY		1.94	2.15	1.88	1.65	1.43	1.77	1.7	1.67	1.24	1.68	1.73	1.67	1.71		
SULPHIDES KG/DAY	ACTUAL	1.1	1.3	1.2	5	3.9	4.9	5.6	5.5	3.2	2.5	3.9	4.2	4.35		
	REQUIREMENT	215	215	215	215	215	215	215	215	215	215	215	215	215		
TEMPERATURE RISE (MAX.) deg. C	ACTUAL	8.8	8.4	9.2	8.6	4.6	9.6	9.3	8.6	6.4	6.7	9.3	10.2	8.3		
	GUIDELINE	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1		
MAX. EFFLUENT TEMPERATURE deg. C	ACTUAL	10.4	8.9	11.2	13.2	12.6	20.8	26.1	26.5	24.9	22	19.1	14.1	17.5		
	GUIDELINE	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2		

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Ontario Hydro
& PLANT LOCATION: Thunder Bay, TGS
Thunder Bay

INDUSTRIAL SECTOR: Electric Power Production

RECEIVING WATERBODY: DIRECT: Lake Superior (Thunder Bay)
INDIRECT:

DESCRIPTION OF ACTIVITY: Coal fired Thermal Generating Station

EFFLUENT QUALITY: Hot water, temperature

EFFLUENT TREATMENT: Coagulant aid, sedimentation.

DISCHARGE TYPE: Continuous (once through condenser cooling water).

COMMENTS:

In compliance. Effluent quality met Ministry requirements.

IMIS NUMBER: SIC CODE: 572 MOE REGION: Northwest DISTRICT: Thunder Bay

04/06/87

ONTARIO HYDRO THUNDER BAY TGS

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	% OF OPERATING HOURS EXCEEDED
FLOW MILLION M3/DAY	ACTUAL	0.94	1	1	1	1	0.82	0.93	0.77	0.8	0.95	1.23	0.97	0.9508	
	GUIDELINE														
TEMPERATUTRE RISE (MAX.)	ACTUAL	8	8	8	9.5	9.5	9	9	9.3	9	11	9	8	8.942	
	GUIDELINE	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	
MAX. EFFLUENT TEMPERATURE	ACTUAL	8	8	8	14	20.3	21.3	24	24	19	19	13	8	15.55	
	GUIDELINE	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	

0* - INTAKE EXCEEDED DISCHARGE

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANTLOCATION: Ontario Hydro - Lakeview TGS Toronto

INDUSTRIAL SECTOR: Electrical Power Generation

RECEIVING WATERBODY: DIRECT: Lake Ontario
INDIRECT:

DESCRIPTION OF ACTIVITY:

EFFLUENT QUALITY:

EFFLUENT TREATMENT: Settling lagoon.

DISCHARGE TYPE: Continuous

COMMENTS:

In compliance.

IMIS NO.:

SIC CODE: 527

MOE REGION: Central

DISTRICT: Halton-Peel

18/06/87

ONTARIO HYDRO LAKEVIEW TGS
CONTROL POINT: 0100 DATA FOR 1986

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	% OF OPERATING HOURS EXCEEDED
FLOW MILLION M3/MONTH	ACTUAL	96	56.2	85.2	39.6	21.7	49.6	44.7	34.8	30.7	25.8	54.1	72	50.95	
	GUIDELINE														
TEMPERATUTRE RISE (MAX.)	ACTUAL	5.2	4.3	3.3	1.5	0.9	-	1.6	0.41	0.82	0.87	2.4	2.74	2.0	
	GUIDELINE	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	
MAX. EFFLUENT TEMPERATURE	ACTUAL	9.1	7.1	7.3	7.0	10.3	9.1	17.5	18.0	14.7	11.1	9.7	7.2	10.7	
	GUIDELINE	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Pamour Porcupine Mines - Pamour Mine
& PLANT LOCATION: Timmins

INDUSTRIAL SECTOR: Metal Mining, Smelting, Refining

RECEIVING WATERBODY: DIRECT: nameless creek
INDIRECT: Porcupine River

DESCRIPTION OF ACTIVITY: Gold is recovered by the Merryl-Crowe process.

EFFLUENT QUALITY: Contains cyanide, copper, lead, nickel.

EFFLUENT TREATMENT: none

DISCHARGE TYPE:Continuous

COMMENTS:

In 1986 two exceedances for Iron were noted for this operation. The cause of these minor exceedances is unexplainable.

IMIS NUMBER: 0001090109 SIC CODE: 0591 MOE REGION: North East DISTRICT: Timmins

26/08/87

000109-01-0(9) PAMOUR PORCUPINE MINES- PAMOUR SITE
CONTROL POINT: 0400 DATA FOR 1986

REPORT DATE: 25 JUN 87

CONCENTRATION PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
CYANIDE AVAIL	ACTUAL	0.13	0.05	0.46		0.37	0.02	0.02	0.01	0.04	0.03	0.08	0.08	0.12	
MG/L AS HCN	GUIDELINE	2.00	2.00	2.00		2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	
COPPER UNF.TOT.	ACTUAL	0.05	0.05	0.20	0.07	0.05	0.05	0.04	0.06	0.05	0.03	0.02	0.01	0.06	
MG/L AS CU	GUIDELINE	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
IRON UNF.TOT.	ACTUAL	1.04	1.09	0.50	0.72	0.46	0.40	0.53	0.98	0.45	0.28	0.31	0.49	0.60	
MG/L AS FE	GUIDELINE	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2
NICKEL UNF.TOT.	ACTUAL	0.11	0.12	0.34	0.13	0.12	0.12	0.21	0.09	0.10	0.07	0.08	0.03	0.13	
MG/L AS NI	GUIDELINE	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
LEAD UNF.TOT.	ACTUAL	0.20	0.14	0.14	0.21	0.23	0.18	0.18	0.09	0.11	0.04	0.04	0.04	0.13	
MG/L AS PB	GUIDELINE	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PH	ACTUAL	7.20	7.45	7.17	7.27	7.17	7.12	7.42	7.25	7.30	7.20	7.25	7.23	7.25	
(PH)	GUIDELINE														
ZINC UNF.TOT.	ACTUAL	0.05	0.07	0.05	0.08	0.07	0.07	0.06	0.08	0.08	0.06	0.07	0.07	0.07	
MG/L AS ZN	GUIDELINE	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

NOTE: PH LIMIT 5.5-10.6. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Pamour Porcupine Mines Ltd, Schumacher Mine
& PLANT LOCATION: Timmins

INDUSTRIAL SECTOR: Metal Mining, Smelting, Refining

RECEIVING WATERBODY: DIRECT : Swamp
INDIRECT: North Porcupine River

DESCRIPTION OF ACTIVITY: Gold Mining using the Merryl-Crowe process.

EFFLUENT QUALITY: Cyanide, copper, zinc and nickel in effluent.

EFFLUENT TREATMENT: None

DISCHARGE TYPE: Continuous

COMMENTS:

In relation to the "Guidelines for Environmental Control in the Ontario Mineral Industry "M.O.E., October, 1981, the Pamour Schumacher Mine discharge for 1986 exceeded cumulative heavy metal (Cu, Pb, Ni, Zn) guideline of 1.0 mg/l for 12 months. This was due to the twelve monthly exceedances of the 1.0 mg/l limit for copper. The guideline limit of 2.0 mg/l for cyanide was exceeded for 3 months. The exceedances were related to the inadequate natural degradation of cyanide which bound up the copper and was discharged. The company has proposed for 1987 to segregate the barren bleed (high in cyanide and copper) to a tailing area where no discharge will occur.

Two bioassays conducted in 1986 indicated that it would take, statistically, 2.2% and 0.7% final effluent to kill 50% of the test fish by the end of the four day exposure.

IMIS NUMBER: 0001090000 SIC CODE: 0592 MOE REGION: Northeast DISTRICT: Timmins

26/08/87

000109-00-0(0) PAMOUR PORCUPINE MINES LTD, SCHUMACHER DIVIS

CONTROL POINT: 0400 DATA FOR 1986

REPORT DATE: 26 AUG 87

CONCENTRATION PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
CYANIDE AVAIL	ACTUAL	1.76	2.17	7.82	1.61	2.17	1.12	0.62	0.05	0.03	0.04	0.04	0.64	1.51	
MG/L AS HCN	GUIDELINE	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	3
COPPER UNF.TOT.	ACTUAL	6.54	6.65	17.36	3.12	7.37	4.24	3.40	3.78	1.55	2.23	2.69	3.93	5.24	
MG/L AS CU	GUIDELINE	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	12
IRON UNF.TOT.	ACTUAL	0.36	0.85	0.48	0.60	0.51	0.49	0.24	2.52	0.29	1.62	0.50	0.35	0.73	
MG/L AS FE	GUIDELINE	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1
NICKEL UNF.TOT.	ACTUAL	0.55	0.60	0.75	0.23	0.30	0.28	0.40	0.40	0.36	0.35	0.38	0.36	0.41	
MG/L AS NI	GUIDELINE	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
LEAD UNF.TOT.	ACTUAL	0.17	0.28	0.18	0.17	0.20	0.23	0.17	0.10	0.14	0.09	0.07	0.06	0.16	
MG/L AS PB	GUIDELINE	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
PH	ACTUAL	7.55	7.50	8.15	7.85	8.70	8.73	8.49	8.45	8.10	7.80	7.75	7.70	8.06	
(PH)	GUIDELINE														
ZINC UNF.TOT.	ACTUAL	0.58	0.65	0.75	0.13	0.16	0.11	0.12	0.26	0.08	0.18	0.25	0.30	0.30	
MG/L AS ZN	GUIDELINE	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

NOTE: PH LIMIT 5.5-10.6. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Petro-Canada Products Ltd. Mississauga

INDUSTRIAL SECTOR: Petroleum Refinery

RECEIVING WATERBODY: DIRECT: Lake Ontario
INDIRECT:

DESCRIPTION OF ACTIVITY:

EFFLUENT QUALITY:

EFFLUENT TREATMENT: Activated sludge.

DISCHARGE TYPE: Continuous

COMMENTS:

The values listed on the data sheet for Phenols and Solvent Extractables are sums taken from sampling point 0100 and 0200. All other parameter values are for sample point 0100 exclusively. Partially treated storm water is, on occasion, being discharged directly into Lake Ontario. A program has been devised to enable Perto-Canada to contain and treat, through the water effluent treatment plant, all storm water up to and including the amount produced by a 5-year storm. The program is expected to be completed in 1989.

IMIS NO.: 0000130104 SIC CODE: 365 MOE REGION: Central DISTRICT: Halton-Peel

18/06/87

000013-01-0(4) PETRO-CANADA PRODUCTS LTD. MISSISSAUGA

CONTROL POINT: 0100 & 0200 DATA FOR 1986

REPORT DATE: 16 SEP 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	9419.49	10551.4	13392.8	10246.8	11465.2	9833.19	9678.62	12265.3	12488.1	9978.66	10001.4	13165.4	11040.5	
M3 /DAY (FTFLOW)	GUIDELINE														
NH3-N FIL.REAC	ACTUAL	17.4	108.9	45.2	29.3	51.5	33.9	28.3	19.2	21.6	57.6	40.4	41.3	41.2	
KG /DAY (NNH3FR)	GUIDELINE	94.2	105.5	133.9	102.5	114.7	98.3	96.8	122.7	124.9	99.8	100.0	131.7	110.4	1
PH	ACTUAL														
(PH)	GUIDELINE					7.4	7.5	7.6	7.7	7.5	7.6	7.6	7.6	7.6	
PHENOLS UNF-REAC	ACTUAL	0.26	0.37	0.40	0.14	0.41	0.09	0.08	0.54	1.36	0.15	0.02	0.10	0.33	
KG /DAY (PHNOL)	GUIDELINE	0.19	0.21	0.27	0.21	0.23	0.20	0.19	0.25	0.25	0.20	0.20	0.26	0.22	6
RESIDUE PARTIC.	ACTUAL	185.6	166.2	173.5	201.0	122.9	54.0	120.3	187.8	286.3	150.3	55.0	82.8	148.8	
KG /DAY (RSP)	GUIDELINE	141.3	158.3	200.9	153.7	172.0	147.5	145.2	184.0	187.3	149.7	150.0	197.5	165.6	6
SOLVENT EXTRACT.	ACTUAL	71.6	77.8	76.0	100.3	59.1	45.5	40.8	67.4	241.8	107.2	21.2	74.5	81.9	
KG /DAY (SOLEXT)	GUIDELINE	146.4	132.9	190.9	165.5	122.6	98.3	96.8	158.7	241.7	146.5	100.0	157.7	158.5	1
SULPHIDE FIL.REAC	ACTUAL	0.2	1.1	0.6	0.6	0.4	0.2	0.1	0.5	0.9	0.4	0.2	0.2	0.45	
KG /DAY (SSIDFR)	GUIDELINE														

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Petro-Canada Products Ltd. Oakville

INDUSTRIAL SECTOR: Petroleum Refinery

RECEIVING WATERBODY: DIRECT : Lake Ontario
INDIRECT:

DESCRIPTION OF ACTIVITY:

EFFLUENT QUALITY:

EFFLUENT TREATMENT: Activated sludge.

DISCHARGE TYPE: Continuous

COMMENTS:

Although several improvements were made to the water effluent treatment plant in 1986, these changes were not sufficient to ensure compliance with provincial objectives on a monthly basis. Recent investigations show the company is having a problem with the quality of biomass in the aeration system. A program to correct this is underway and should be completed by the end of 1988.

A bioassay conducted in 1986 indicated it would take, statisically, 95% effluent to kill 50% of the test fish by the end of a four day exposure.

IMIS NO.: 0000530006 SIC CODE: 365 MOE REGION: Central DISTRICT: Halton-Peel

18/06/87

000053-00-0(6) PETRO-CANADA PRODUCTS INC. OAKVILLE REPORT DATE: 16 SEP 87
CONTROL POINT: 0100 DATA FOR 1986

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	5027.97	4418.79	4496.08	4373.33	4573.36		5196.18	5768.98	5259.82	5123.44	5159.81	5405.3	4982	
M3 /DAY (FTFLOW)	GUIDELINE														
NH3-N FIL.REAC	ACTUAL	98.1	50.4	38.4	90.89	71.69		46.26	42.81	34.46	30.92	13.3	30.71	49.81	
KG /DAY (NNH3FR)	GUIDELINE	50.2797	44.1879	44.9608	43.7333	45.7336		51.9618	57.6898	52.5982	51.2344	51.5981	54.053	49.82	4
PHENOLS UNF-REAC	ACTUAL	0.29	0.31	0.19	0.154	0.86	0.12	0.12	0.139	0.114	0.104	0.139	0.154	0.298	
KG /DAY (PHNOL)	GUIDELINE	0.10	0.09	0.09	0.09	0.09		0.10	0.12	0.11	0.10	0.10	0.11	0.10	11
RESIDUE PARTIC.	ACTUAL	70	63.8	57.6	83.35	94.16	107.05	134.88	162.26	110.1	108.51	108.14	87.3	98.9	
KG /DAY (RSP)	GUIDELINE	75.4196	66.2819	67.4412	65.6	68.6004	-	77.9426	86.5347	78.8973	76.8516	77.3971	81.0794	68.5	9
SOLVENT EXTRACT.	ACTUAL	6.8	7.9	7.3	9.3	7.49	6.72	9.08	8.85	18.3	9.44		9.48	8.4	
KG /DAY (SOLEXT)	GUIDELINE	50.28	44.19	44.96	43.73	45.73	-	51.96	57.69	52.60	51.23		54.05	45.1	1
SULPHIDE FIL.REAC	ACTUAL	3.2	2.8	2.9	2.497	2.72	3.04	3.04	5.04	3.09	3.27	3.09	3.68	3.20	
KG /DAY (SSIDFR)	GUIDELINE														

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Petrosar Ltd.
& PLANT LOCATION: Corunna

INDUSTRIAL SECTOR: Petroleum Refining

RECEIVING WATERBODY: DIRECT: St. Clair River
INDIRECT:

DESCRIPTION OF ACTIVITY: Primary function to provide feedstock for Dupont, Polymer and Union Carbide.

EFFLUENT QUALITY: Contains insoluble and soluble compounds from crude oil at parts per billion level.

EFFLUENT TREATMENT: Tertiary treatment diffused outfall.

DISCHARGE TYPE: continuous through a submerged diffuser

COMMENTS:

In compliance.

IMIS NUMBER: 0000480004 SIC CODE: 3651 MOE REGION: Southwest DISTRICT: Sarnia

22/07/87

000048-00-0(4) PETROSAR LTD
CONTROL POINT: 0200 DATA FOR 1986
FLOW/LOADING PARAMETERS

REPORT DATE: 23 JUL 87

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	6864.59	6955.51	7455.58	6137.22	5773.53	6455.44	6637.29	6091.76	7003.7	6500.9	6046.29	5682.61	6467.04	
M3 /DAY (FTFLOW)	GUIDELINE														
NH3-N TOTAL	ACTUAL	6	20	21.1	8	5	11	52	10	13	7	14	16	15.26	
KG /DAY (NNHTFR)	GUIDELINE	68.6459	69.5551	74.5558	61.3722	57.7353	64.5544	66.3729	60.9176	70.04	65.009	60.4629	56.8261	64.67	
PH	ACTUAL	7.9	7.8	7.7	7.3	7.8	7.6	7.6	7.5	7.5	7.7	-	-	7.66	
(PH)	GUIDELINE														
PHENOLS UNF-REAC	ACTUAL	0.05	0.03	0.01	0.02	0.04	0.04	0.02	0.04	0.03	0.05	0.04	0.04	0.03	
KG /DAY (PHNOL)	GUIDELINE	0.137292	0.13911	0.149111	0.122744	0.11547	0.129109	0.132746	0.121835	0.14	0.130018	0.120926	0.113652	0.13	
RESIDUE PARTIC.	ACTUAL	28	38	41	18	34	22	37	23	41	34	21	22	29.92	
KG /DAY (RSP)	GUIDELINE	102.969	104.333	111.834	92.0582	86.6029	96.8316	99.5593	91.3763	105.1	97.5136	90.6944	85.2391	88.25	
SOLVENT EXTRACT.	ACTUAL	3	3	4	6	7	4	2	5	3	6	4	3	4.17	
KG /DAY (SOLEXT)	GUIDELINE	68.6459	69.5551	74.5558	61.3722	57.7353	64.5544	66.3729	60.9176	70.037	65.009	60.4629	56.8261	64.67	
CARBON TOTAL	ACTUAL	67	38	53	47	158	78	34	32	69	32	61	64	61.08	
KG /DAY (TOC)	GUIDELINE														

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Polysar Ltd.
& PLANT LOCATION: Sarnia

INDUSTRIAL SECTOR: Organic Chemicals, Synthetic Fibres

RECEIVING WATERBODY: DIRECT: St. Clair River
INDIRECT:

DESCRIPTION OF ACTIVITY: Feedstock from refineries in the Sarnia area are converted into several grades of synthetic rubber.

EFFLUENT QUALITY: Contains a variety of organics including chlorinated compounds

EFFLUENT TREATMENT:

DISCHARGE TYPE: continuous through five outfalls

COMMENTS:

In complinace.

A bioassay conducted in 1986 indicated that the discharge from the BIOX effluent was not acutely lethal to fish, however a bioassay indicated that it would take, statistically, 63% Stereo API effluent to kill 50% of the test fish after four days exposure.

IMIS NUMBER: 0000030007 SIC CODE: 162 373 MOE REGION: Southwest DISTRICT: Sarnia

27/07/87

000003-00-0(7) POLYSAR LIMITED SARNIA

S U M M A R Y FOR EMIS. TYPE: 16 FINAL DISCHARGE - NET DATA DISCHARGED INTO: 02/003/ LAKE ERIE

INCLUDES CONTROL POINTS: 0200 0300 0400 0500 0600

DATA FOR 1986

REPORT DATE: 26 AUG 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	260445	256445	260445	260450	239220	254890	260990	281300	291260	248000	252650	237390	258625	
M3 /DAY (FTFLOW)	GUIDELINE														
NH3-N TOTAL	ACTUAL	223.679	224.549	182.789	142.629	140.913	167.842	276.904	220.9	161.13	105.853	72.0809	152.9	172.6	
KG /DAY (NNHTFR)	GUIDELINE	2604	2564	2604	2605	2392	2549	2610	2813	2913	2480	2527	2374	2586	
PH	ACTUAL	8.1	7.85	7.65	7.95	7.85	7.8	7.75	7.75	7.8	7.85	7.55	8	7.8	
(PH)	GUIDELINE														
PHENOLS UNF-REAC	ACTUAL	0.41	0.455	0.534	0.39	0.389	0.425	0.258	0.291	0.549	0.277	0.347	0.386	0.393	
KG /DAY (PHNOL)	GUIDELINE	5.21	5.13	5.21	5.21	4.78	5.10	5.22	5.63	5.83	4.96	5.05	4.75	5.17	
RESIDUE PARTIC.	ACTUAL	48	834	1110	1278	1672	380	2258	1053.2	1808	1063.8	1307	1785	1216	
KG /DAY (RSP)	GUIDELINE	3907	3847	3907	3907	3588	3823	3915	4220	4369	3720	3790	3561	3879	
SOLVENT EXTRACT.	ACTUAL	49	30	62	88	92	5	4	37	52	22	51	83	47.9	
KG /DAY (SOLEXT)	GUIDELINE	3907	3847	3907	3907	3588	3823	3915	4220	4369	3720	3790	3561	3879	
CARBON TOTAL	ACTUAL	1074.8	1102.6	941.1	888	898	592	460	543.1	1073	1004.8	798	1424.8	900	
KG /DAY (TOC)	GUIDELINE														

NOTE: PH LIMIT 5.5-9.5, 0* INDICATES INTAKE EXCEEDED DISCHARGE, S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: & PLANT LOCATION: Provincial Papers Ltd. - A Division of Abitibi-Price Inc. Thunder Bay

INDUSTRIAL SECTOR: Pulp and Paper Mill

RECEIVING WATERBODY: DIRECT: Lake Superior (Thunder Bay)
INDIRECT:

DESCRIPTION OF ACTIVITY: Fine papers - coated and uncoated - are made from groundwood pulp using softwoods (black spruce, white spruce and balsam fir) and purchased pulp. Hydrogen peroxide is used to whiten pulp.

EFFLUENT QUALITY: Contains suspended solids (bark and wood fibre) and many organic compounds from the pulping processes.

EFFLUENT TREATMENT: Clays are recovered by an in-mill system. High solids streams are treated by a clarifier. All mill effluent passes into a settling lagoon.

DISCHARGE TYPE: continuous surface

COMMENTS:

In compliance. A Control Order was issued on April 29, 1985. The company is required to meet specific BOD and TSS loadings in the total mill effluent discharged (BOD - 7.3 metric tonnes per day or alternately 22 kg/metric tonne of product and total suspended solids - 2.5 metric tonnes per day or 50 milligrams per litre). In addition, the company is required to address effluent toxicity.

This mill effluent normally does not kill fish.Three trout bioassays conducted in 1986, indicated the final treated effluent to have been non-acutely lethal to test fish.

IMIS NUMBER: 0000860106 SIC CODE(S): 271 MOE REGION: Northwest DISTRICT: Thunder Bay

25/08/87

000086-01-0(6) ABITIBI-PRICE PROVINCIAL PAPER DIV.
CONTROL POINT: 0100 DATA FOR 1986

REPORT DATE: 26 AUG 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	51593	47066	45513	45783	44490	46541	46678	49787	47333	50482	46690	43431	47115.6	
M3 /DAY (FTFLOW)	GUIDELINE														
BOD 5 DAY	ACTUAL	3350	3770	3320	2840	3070	3440	2990	3490	2930	3230	2800	2480	3142.5	
KG /DAY (BOD5)	REQUIREMENT	7300	7300	7300	7300	7300	7300	7300	7300	7300	7300	7300	7300	7300	
PHOSPHOR UNF.TOT.	ACTUAL	2.2	3.3	3.0	1.4	1.4	1.4	3.0	5.8	1.9	2.3	1.4	1.6	2.4	
KG /DAY (PPUT)	GUIDELINE	51.6	47.1	45.5	45.8	44.5	46.5	46.7	49.8	47.3	50.5	46.7	43.4	47.1	
RESIDUE PARTIC.	ACTUAL	1370	1530	1230	1120	820	990	1010	1150	970	1060	800	960	1084.16	
KG /DAY (RSP)	REQUIREMENT	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Reichhold Chemicals Ltd.
& PLANT LOCATION: Thunder Bay

INDUSTRIAL SECTOR: Organic chemicals, Synthetic fibres

RECEIVING WATERBODY: DIRECT: Kaministiquia River
INDIRECT: 7 km to Lake Superior (Thunder Bay)

DESCRIPTION OF ACTIVITY: Formaldehyde (produced from methanol) is used to make phenol-formaldehyde and urea formaldehyde resins.

EFFLUENT QUALITY: Contains low levels of phenolic compounds

EFFLUENT TREATMENT: Secondary activated sludge.

DISCHARGE TYPE: continuous surface

COMMENTS:

Suspended Solids not in compliance with guideline. Company plans to discharge to municipal sewer system once sewer lines are extended. *Phenolic requirement 1 mg/l in Certificate of Approval; Suspended Solids guideline 15 mg/l. An additional clarifier was added in 1985 and effluent recirculation is used to reduce Suspended Solids in the discharge. The Ministry is working with the Company to further reduce the Suspended Solids.

The discharge is normally acutely lethal to fish , however one of three bioassays conducted in 1986 indicated the effluent was not lethal to fish. The other two bioassays indicated it would take statistically 4.8% and 4.6% effluent to kill 50% of the test fish in a four day exposure.

IMIS NUMBER: 0001830009 SIC CODE(S): 3783 MOE REGION: Northwest DISTRICT: Thunder Bay

04/06/87

000183-00-0(9) REICHHOLD LIMITED
CONTROL POINT: 0100 DATA FOR 1986
FLOW/LOADING PARAMETERS

REPORT DATE: 05 AUG 87

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW M3 /DAY (FTFLOW)	ACTUAL	364	406	314	239	386	356	364	360	411	374	354	331	354.9	
	GUIDELINE														
PH (PH)	ACTUAL	8	8.06	8.11	7.84	8.03	7.98	7.95	8.02	7.88	8.06	7.8	7.78	7.96	
	GUIDELINE														
PHENOLS UNF-REAC KG /DAY (PHNOL)	ACTUAL	0.0109	0.0081	0.0031	0.0048	0.0077	0.0071	0.0073	0.0072	0.0082	0.0075	0.0071	0.0066	0.007	
	REQUIREMENT	0.364	0.406	0.314	0.239	0.386	0.356	0.364	0.36	0.411	0.374	0.354	0.331	0.355	
PO4 UNF.TOT. KG /DAY (PPO4UT)	ACTUAL	0.0728	0.0081	0.3328	0.1291	0.1235	0	0.0036	0.684	0.3288	0.2618	0.0708	0.0331	0.19	
	GUIDELINE														
RESIDUE PARTIC. KG /DAY (RSP)	ACTUAL	72	67	57	41	67	62	70	66	66	58	74	54	62.83	
	GUIDELINE	5.46	6.09	4.71	3.585	5.79	5.34	5.46	5.4	6.165	5.61	5.31	4.965	5.32	12

NOTE: PH LIMIT 5.5-9.5, 0* INDICATES INTAKE EXCEEDED DISCHARGE, S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Rio Algom Ltd. (Panel Mill) Elliot Lake

INDUSTRIAL SECTOR: Metal Mining, Smelting, Refining

RECEIVING WATERBODY: DIRECT: Quirke Lake to Serpent River
INDIRECT: 65 km to Lake Huron (North Channel)

DESCRIPTION OF ACTIVITY: Ore is mined, milled and separated into tailings and concentrates.

EFFLUENT QUALITY: Contains metal salts, ammonia compounds, and radioactive materials

EFFLUENT TREATMENT: Addition of barium chloride and lime to precipitate radium, and adjust pH and precipitate metals followed by removal in settling pond.

DISCHARGE TYPE: Continuous

COMMENTS:

Radioactivity and chemical parameter limits are set by Canada's Atomic Energy Control Board. In compliance with AECB licensing requirements.

IMIS NUMBER: 0001670207 SIC CODE: 057 MOE REGION: Northeast DISTRICT: Sault Ste. Marie

03/06/87

000167-02-0(7) RIO ALGOM LIMITED
CONTROL POINT: 0100 DATA FOR 1986
FLOW/LOADING PARAMETERS

REPORT DATE: 25 JUN 87

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	7577.28	6635.52	6583.68	9642.23	9797.75	9417.60	8208.00	8069.76	7352.64	8821.43	8994.23	8899.20	8333.27	
M3 /DAY (FTFLOW)	GUIDELINE														
COPPER UNF.TOT.	ACTUAL	0.12	0.05	0.14	0.10	0.01	0.12	0.07	0.06	0.02	0.11	0.12	0.06	0.08	
KG/D AS CU	GUIDELINE	4.55	3.98	3.95	5.79	5.88	5.65	4.92	4.84	4.41	5.29	5.40	5.34	5.00	
IRON UNF.TOT.	ACTUAL	0.38	0.13	0.86	0.96	0.59	5.09	0.16	0.40	0.37	0.35	0.45	0.62	0.82	
KG/D AS FE	GUIDELINE	7.58	6.64	6.58	9.64	9.80	9.42	8.21	8.07	7.35	8.82	8.99	8.90	8.33	
NICKEL UNF.TOT.	ACTUAL	0.28	0.19	0.19	0.33	0.35	0.34	0.21	0.24	0.16	0.19	0.19	0.28	0.24	
KG/D AS NI	GUIDELINE	7.58	6.64	6.58	9.64	9.80	9.42	8.21	8.07	7.35	8.82	8.99	8.90	8.33	
LEAD UNF.TOT.	ACTUAL	0.20	0.11	0.36	0.29	0.23	0.30	0.31	0.44	0.21	0.29	0.27	0.12	0.26	
KG/D AS PB	GUIDELINE	3.03	2.65	2.63	3.86	3.92	3.77	3.28	3.23	2.94	3.53	3.60	3.56	3.33	
PH	ACTUAL	8.08	8.49	8.35	7.51	7.32	7.91	7.76	7.79	7.97	8.32	8.44	8.60	8.05	
(PH)	GUIDELINE														
RADIUM 226 FIL.	ACTUAL	232.00	227.00	335.00	102.00	99.00	133.00	132.00	68.00	128.00	229.00	145.00	216.00	170.50	
MBQ/L AS RA	GUIDELINE	370.00	370.00	370.00	370.00	370.00	370.00	370.00	370.00	370.00	370.00	370.00	370.00	370.00	
RADIUM 226	ACTUAL	488.00	483.00	665.00	261.00	161.00	197.00	198.00	112.00	231.00	348.00	390.00	518.00	337.67	
MBQ/L AS RA	GUIDELINE														
RESIDUE PARTIC.	ACTUAL	7.58	6.64	19.75	9.64	9.80	9.42	8.21	8.07	14.71	17.64	17.99	8.90	11.81	
KG/D (RSP)	GUIDELINE	113.66	99.53	98.76	144.63	146.97	141.26	123.12	121.05	110.29	132.32	134.91	133.49	125.00	
ZINC UNF.TOT.	ACTUAL	0.30	0.14	0.29	0.50	0.14	0.39	0.16	1.86	0.07	0.46	0.08	0.12	0.38	
KG/D AS ZN	GUIDELINE	7.58	6.64	6.58	9.64	9.80	9.42	8.21	8.07	7.35	8.82	8.99	8.90	8.33	

NOTE: PH LIMIT 5.5-10.6, 0* INDICATES INTAKE EXCEEDED DISCHARGE, S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Rio Algom Ltd. (Quirke Mill) Elliot Lake

INDUSTRIAL SECTOR: Metal Mining, Smelting, Refining

RECEIVING WATERBODY: DIRECT: Serpent River
INDIRECT: 67 km to Lake Huron (North Channel)

DESCRIPTION OF ACTIVITY: Ore is mined, milled and separated into tailings and concentrates. Ammonia - based compounds are used in the recovery of uranium.

EFFLUENT QUALITY: Contains dissolved metal salts, ammonia compounds, and radioactive materials.

EFFLUENT TREATMENT: Mill tailings are treated with lime to effect pH control and precipitate metals. Tailings effluent is treated with barium chloride to precipitate Radium 226 and lime addition to adjust pH before final discharge to river.

DISCHARGE TYPE: Continuous

COMMENTS:

Radioactivity and chemical parameter limits are set by Canada's Atomic Energy Control Board. In compliance with AECB licence requirements.

IMIS NUMBER: 0001670108 SIC CODE: 057 MOE REGION: Northeast DISTRICT: Sault Ste. Marie

03/06/87

000167-01-0(8) RIO ALGOM LIMITED
CONTROL POINT: 0100 DATA FOR 1986
FLOW/LOADING PARAMETERS

REPORT DATE: 28 JUL 87

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	7750.08	12337.90	12173.80	15828.40	18593.30	10981.40	0.00	10687.60	13893.10	21271.60	11508.40	12312.00	12278.10	
M3 /DAY (FTFLOW)	GUIDELINE														
COPPER UNF.TOT.	ACTUAL	0.18	0.33	0.23	0.38	0.24	0.19	0.00	0.17	0.10	0.70	0.23	0.41	0.24	
KG/D AS CU	GUIDELINE	4.65	7.40	7.30	9.50	11.16	6.59	0.00	6.41	8.34	12.76	6.91	7.39	7.37	
IRON UNF.TOT.	ACTUAL				37.67			0.00	7.80	24.45	154.86	55.82		46.76	
KG/D AS FE	GUIDELINE				15.83				10.69	13.89	21.27	11.51		12.28	4
NICKEL UNF.TOT.	ACTUAL	0.29	0.58	0.57	0.63	0.80	0.34	0.00	0.56	0.46	0.60	0.16	0.75	0.44	
KG/D AS NI	GUIDELINE	7.75	12.34	12.17	15.83	18.59	10.98	0.00	10.69	13.89	21.27	11.51	12.31	12.28	
LEAD UNF.TOT.	ACTUAL	0.36	0.31	0.41	0.54	0.48	0.29	0.00	0.35	0.83	0.55	0.23	0.31	0.36	
KG/D AS PB	GUIDELINE	7.75	12.34	12.17	15.83	18.59	10.98	0.00	10.69	13.89	21.27	11.51	12.31	12.28	
PH	ACTUAL	8.45	8.51	8.44	8.50	8.37	8.13	0.00	8.04	8.21	8.98	7.70	7.67	7.58	
(PH)	GUIDELINE														
RADIUM 226 FIL.	ACTUAL	45.00	40.00	40.00	73.00	102.00	78.00	0.00	322.00	176.00	147.00	78.00	75.00	98.00	
MBQ/L AS RA	GUIDELINE	370.00	370.00	370.00	370.00	370.00	370.00	370.00	370.00	370.00	370.00	370.00	370.00	370.00	
RADIUM 226	ACTUAL	67.00	97.00	74.00	98.00	128.00	112.00	0.00	346.00	203.00	173.00	118.00	95.00	125.92	
MBQ/L AS RA	GUIDELINE														
RESIDUE PARTIC.	ACTUAL	108.50	123.38	109.56	63.31	74.37	54.91	0.00	42.75	83.36	127.63	115.08	110.81	82.88	
KG/D (RSP)	GUIDELINE	116.25	185.07	182.61	237.43	278.90	164.72	0.00	160.31	208.40	319.07	172.63	184.68	184.17	
ZINC UNF.TOT.	ACTUAL	0.09	0.15	0.56	-	0.15	0.12	0.00	0.41	2.78	1.06	0.16	0.42	0.47	
KG/D AS ZN	GUIDELINE	7.75	12.34	12.17	15.83	18.59	10.98	0.00	10.69	13.89	21.27	11.51	12.31	12.28	

NOTE: PH LIMIT 5.5-10.6, 0* INDICATES INTAKE EXCEEDED DISCHARGE, S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Rio Algom Ltd. (Stanleigh Mill) Elliot Lake

INDUSTRIAL SECTOR: Metal Mining, Smelting, Refining

RECEIVING WATERBODY: DIRECT: Serpent River (McCabe Lake)
INDIRECT: Lake Huron (North Channel)

DESCRIPTION OF ACTIVITY: Ore mined, milled and separated into tailings and concentrates.

EFFLUENT QUALITY: Contains dissolved metal salts and radioactive material.

EFFLUENT TREATMENT: Effluent system consists of settling basin, sequential addition of barium chloride and lime, filtration plant to remove solids.

DISCHARGE TYPE: Continuous

COMMENTS:

The radioactivity and chemical parameter limits are set by Canada's Atomic Energy Control Board. Discharge in compliance with respect to AECB licence requirements.

IMIS NUMBER: 0001670306 SIC CODE: 057 MOE REGION: Northeast DISTRICT: Sault Ste. Marie

03/06/87

000167-03-0(6) RIO ALGOM LIMITED
CONTROL POINT: 0100 DATA FOR 1986

REPORT DATE: 28 JUL 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	31155.8	30205.4	32641.9	385085	36607.6	38197.4	28797.1	36331.2	39381.1	43951.6	31138.5	30585.6	63673.1	
M3 /DAY (FTFLOW)	GUIDELINE														
COPPER UNF.TOT.	ACTUAL	0.47	0.33	0.65	3.47	0.15	0.50	0.23	0.22	0.20	0.31	0.22	0.31	0.61	
KG/D AS CU	GUIDELINE	18.69	18.12	19.59	231.05	21.96	22.92	17.28	21.80	23.63	26.37	18.68	18.35	38.20	
NICKEL UNF.TOT.	ACTUAL	0.81	0.88	1.01	12.71	1.10	0.92	0.75	0.84	0.51	0.79	0.37	0.64	1.52	
KG/D AS NI	GUIDELINE	31.16	30.21	32.64	385.09	36.61	38.20	28.80	36.33	39.38	43.95	31.14	30.59	63.67	
LEAD UNF.TOT.	ACTUAL	0.87	0.48	0.07	3.08	0.37	1.30	0.37	1.16	1.10	1.23	-	0.15	1.18	
KG/D AS PB	GUIDELINE	12.46	12.08	13.06	154.03	14.64	15.28	11.52	14.53	15.75	17.58	12.46	12.23	25.47	
PH	ACTUAL	7.68	7.36	7.10	6.80	7.26	7.43	7.64	7.33	7.74	7.45	7.86	7.36	7.42	
(PH)	GUIDELINE														
RADIUM 226 FIL.	ACTUAL			60.00			48.00	45.00	42.00	42.00	46.00		43.00	46.57	
MBQ/L AS RA	GUIDELINE			370.00			370.00	370.00	370.00	370.00	370.00		370.00	370.00	
RADIUM 226	ACTUAL	335.00	332.00	429.00	105.00	64.00	71.00	71.00	53.00	62.00	59.00	58.00	68.00	142.25	
MBQ/L AS RA	GUIDELINE														
RESIDUE PARTIC.	ACTUAL	311.56	332.26	228.49	770.17	36.61	38.20	28.80	36.33	39.38	43.95	31.14	30.59	160.60	
KG/D (RSP)	GUIDELINE	467.34	453.08	489.63	577.63	549.11	572.96	431.96	544.97	590.72	659.27	467.08	458.78	521.88	1
ZINC UNF.TOT.	ACTUAL	1.71	2.05	4.24	50.06	1.10	3.44	2.19	2.76	0.98	2.29	0.47	1.28	4.19	
KG/D AS ZN	GUIDELINE	31.16	30.21	32.64	385.09	36.61	38.20	28.80	36.33	39.38	43.95	31.14	30.59	63.67	

NOTE: PH LIMIT 5.5-10.6. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Rothsay, The Rendering Div. of Maple Leaf Mills Ltd. Rothsay

INDUSTRIAL SECTOR: Food and Beverage

RECEIVING WATERBODY: DIRECT: Moorefield Creek to Conestogo River to Grand River
INDIRECT: Lake Erie

DESCRIPTION OF ACTIVITY: rendering

EFFLUENT QUALITY: Contains phosphorus, hydrogen sulphide and dissolved organics.

EFFLUENT TREATMENT: Grease skimming, screening, flow equalization, flocculation, dissolved air flotation, aeration, sedimentation, and treated effluent polishing in holding lagoons by aeration and lime treatment for ammonia and phosphorus reduction.

DISCHARGE TYPE: seasonal; discharge permitted only in November - February period.

COMMENTS:

In compliance. The 1986 discharge (November 25 to December 13) met all criteria of the Certificate of Approval #4-079-84-866 dated May 1986. In previous years the company used to dispose of all treated effluent by spray irrigation on its own land. The present C of A, allowing seasonal discharge to Moorefield Creek requires that the existing spray irrigation system be maintained as a backup for drought flow years and restricts its use to 91,000 cubic metres (20,000,000 gallons) per year. The C of A permits a controlled treated wastewater discharge with varying limits of flowrate and contaminant concentration depending on month of discharge and receiving stream flowrate and ammonium nitrogen concentrations.

IMIS NO.: SIC CODE: MOE REGION: West Central DISTRICT: Cambridge

02/06/87

ROTHSAV, THE RENDERING DIVISION OF MAPLE LEAF MILLS LTD
CONTROL POINT: 0100 DATA FOR 1986

REPORT DATE: 29 JUL 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG . . .	NOV 28	DEC 4	DEC 11	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL									6609	6420	5832	6287	
M3 /DAY (FTFLOW)	REQUIREMENT									20131	22550	13824	18835	
BOD 5 DAY	ACTUAL									19.8	9.6	8.7	12.7	
KG /DAY (BOD5)	REQUIREMENT									301.9	338.3	207.4	282.5	
TOD	ACTUAL									139.3	183.5	137.4	153.4	
KG /DAY (TOD)	REQUIREMENT									3330	3800	2650	3260	
NH3-N TOTAL	ACTUAL									14.5	18	19.3	17.3	
KG /DAY (NNHTFR)	REQUIREMENT									44.3	63.1	45.6	51	
PH	ACTUAL									7.3	8	8.1	7.8	
(PH)	REQUIREMENT													
PHOSPHOR UNF.TOT.	ACTUAL									2	1.9	1.7	1.9	
KG /DAY (PPUT)	REQUIREMENT									20.1	22.6	13.8	18.8	
RESIDUE PARTIC.	ACTUAL									33	44.9	43.7	40.5	
KG /DAY (RSP)	REQUIREMENT									301.9	338.3	207.4	282.5	
HYD. SULFIDE	ACTUAL									0.01		0.01	0.01	
KG /DAY (SSIDA)	REQUIREMENT									0.46	0.28	0.21	0.32	

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Shell Canada Ltd. Corunna

INDUSTRIAL SECTOR: Petroleum Refining

RECEIVING WATERBODY: DIRECT: Talford Creek
INDIRECT: St. Clair River

DESCRIPTION OF ACTIVITY: Crude oil is converted into a wide range of petroleum products

EFFLUENT QUALITY: Contains insoluble and dissolved compounds from crude oil at parts per billion level.

EFFLUENT TREATMENT:

DISCHARGE TYPE: continuous through two outfalls

COMMENTS:

In compliance.

IMIS NUMBER: 0000510107 SIC CODE: 3651, 373 MOE REGION: Southwest DISTRICT: Sarnia

22/07/87

000051-01-0(7) SHELL CANADA LTD SARNIA MANUFACTURING CENTRE CORUNNA

S U M M A R Y FOR EMIS. TYPE: 16 FINAL DISCHARGE - NET DATA DISCHARGED INTO: 02/003/ LAKE ERIE

INCLUDES CONTROL POINTS: 0200 0300

DATA FOR 1986

REPORT DATE: 23 JUL 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	235903	221843	224895	152314	154791	210990	223904	256326	266777	251794	244497	230587	222885	
M3 /DAY (FTFLOW)	GUIDELINE														
NH3-N TOTAL	ACTUAL	0	0	0	1.23	0	6.25	3.6	0	0	3.2	18.5	0	2.73	
KG /DAY (NNHTFR)	GUIDELINE	2359.02	2218.42	2248.95	1523.14	1547.91	2109.9	1191.92	2563.25	2667.77	2517.93	2444.97	2305.86	2141.59	
PH	ACTUAL	7.5	7.75	7.8	7.6	7.6	7.9	7.9	8	8	7.8	7.9	7.5	7.77	
(PH)	GUIDELINE														
PHENOLS UNF-REAC	ACTUAL	0	0.36	0.22	0.12	0.17	0.17	0.6	0.02	0.11	0.3	0.03	0.1	0.18	
KG /DAY (PHNOL)	GUIDELINE	4.71805	4.43684	4.4979	3.04628	3.09582	4.2198	4.47806	5.12651	5.33553	5.03587	4.88994	4.61172	4.46	
RESIDUE FILTERED	ACTUAL	0	1642.17	3468.09	4750.29	4476.89	17660.3	9209.19	5810.29	6002.09	1406.69	2484.59	3555.8	5017.14	
KG /DAY (RSF)	GUIDELINE														
RESIDUE PARTIC.	ACTUAL	568.979	672.9	462.5	0	0	840.1	382.2	534.4	0	0	63	928.6	371.06	
KG /DAY (RSP)	GUIDELINE	3538.54	3327.64	3373.42	2284.71	2321.86	3164.85	3358.55	3844.88	4001.65	3776.9	3667.46	3458.79	3343.27	
SOLVENT EXTRACT.	ACTUAL	0	137.089	159.1	100.2	113.1	136.319	220.1	166.6	98	94.8	80.5	118.9	118.73	
KG /DAY (SOLEXT)	GUIDELINE	2359.02	2218.42	2248.95	1523.14	1547.91	2109.9	2239.03	2563.25	2667.77	2517.93	2444.97	2305.86	2228.85	
SULPHIDE UNF.REAC	ACTUAL	3.5	0	0	0	0	0	0	0	0	1.79	0	0	0.44	
KG /DAY (SSIDUR)	GUIDELINE														
CARBON TOTAL	ACTUAL	490.2	338.059	382.959	0	201.649	341.259	568.9	256.2	0	68.6	559.5	352.9	296.69	
KG /DAY (TOC)	GUIDELINE														

NOTE: PH LIMIT 5.5-9.5, 0* INDICATES INTAKE EXCEEDED DISCHARGE, S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Sherman Mine
& PLANT LOCATION: Temagami

INDUSTRIAL SECTOR: Metal Mining, Smelting, Refining

RECEIVING WATERBODY: DIRECT: Lake Temagami
INDIRECT: Sturgeon R. to Lake Nipissing

DESCRIPTION OF ACTIVITY: Open pit mining. Concentrating iron ore to pellets.

EFFLUENT QUALITY: Contains suspended solids (iron) and dissolved inorganic salts.

EFFLUENT TREATMENT: Tailings impoundment.

DISCHARGE TYPE: Continuous from April to December. None from January to March due to freeze up.

COMMENTS:

Limits based on guidelines for Ontario mining industry. The Mill operation may be suspended during the summer months depending on the demand. Only one sample was obtained in 1986 on which compliance was based.

IMIS NUMBER: 0001540004 SIC CODE: 058 MOE REGION: Northeast DISTRICT: North Bay

03/06/87

000154-00-0(4) SHERMAN MINE
CONTROL POINT: 0100 DATA FOR 1986
FLOW/LOADING PARAMETERS

REPORT DATE: 30 JUL 87

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	0.00	0.00	0.00	0.00	9820.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	818.33	
M3 /DAY (FTFLOW)	GUIDELINE														
ALUMINUM UNF.TOT.	ACTUAL					0.98								0.98	
KG /DAY (ALUT)	GUIDELINE					9.82								9.82	SC
COPPER UNF.TOT.	ACTUAL					0.30								0.30	
KG /DAY (CUUT)	GUIDELINE					9.82								0.82	
IRON UNF.TOT.	ACTUAL					20.64								20.64	
KG /DAY (FEUT)	GUIDELINE					9.82								0.82	1
NICKEL UNF.TOT.	ACTUAL					0.98								0.98	
KG /DAY (NIUT)	GUIDELINE					9.82								0.82	
RESIDUE FILTERED	ACTUAL					6486.00								6486.00	
KG /DAY (RSF)	GUIDELINE														
RESIDUE PARTIC.	ACTUAL					49.00								49.00	
KG /DAY (RSP)	GUIDELINE					147.30								147.30	
SULPHATE UNF.REAC	ACTUAL					1081.00								1081.00	
KG /DAY (SSO4UR)	GUIDELINE														

NOTE: PH LIMIT 5.5-10.6. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: & PLANT LOCATION: Sohio (formerly Canadian Carborundum) Niagara Falls

INDUSTRIAL SECTOR: Industrial Minerals

RECEIVING WATERBODY: DIRECT: Welland River to Niagara River
INDIRECT:

DESCRIPTION OF ACTIVITY: Abrasive oxides are manufactured in electric arc furnaces.

EFFLUENT QUALITY: There are two discharges, both to Welland River; results are composites of all discharges.

EFFLUENT TREATMENT: Process wastewater treatment consists of oil-water separation.

DISCHARGE TYPE: continuous through an outfall

COMMENTS:

Company is not in compliance with solids loading. Wastewater is furnace cooling water only.

IMIS NUMBER: 0001660000 SIC CODE: 357 MOE REGION: West Central DISTRICT: Welland

10/06/87

000166-00-0(0) SOHIO NIAGARA FALLS
S U M M A R Y FOR EMIS. TYPE: 04 FINAL DISCHARGE - GROSS DATA DISCHARGED INTO: 02/004/5130 TWELVE MILE CR.
INCLUDES CONTROL POINTS: 0100 0200
DATA FOR 1986

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	29164	29164	19436	19444	19444	19444	19444	19444	19444	19444	9720	9720	19442.6	
M3 /DAY (FTFLOW)	GUIDELINE														
BOD 5 DAY	ACTUAL				21.69	99.49	172.324	267.6		155.819	40.79	97.56	94	118.66	
KG /DAY (BOD5)	GUIDELINE				291.66	291.66	291.66	291.66		291.66	291.66	145.8	145.8	291.64	
PH	ACTUAL				7.915	7.285	7.54	7.58		7.855	8.22	8.15	7.945	7.81	
(PH)	GUIDELINE														
PHOSPHOR UNF.TOT.	ACTUAL					0.406	0.3897	2.496	38.2		0.383	0.56	0.003	6.06	
KG /DAY (PPUT)	GUIDELINE					194.44	194.44	194.44	194.44		194.44	97.2	97.2	194.43	

NOTE: PH LIMIT 5.5-9.5, 0* INDICATES INTAKE EXCEEDED DISCHARGE, S/C -SEE COMMENT

000166-00-0(0) SOHIO NIAGARA FALLS
S U M M A R Y FOR EMIS. TYPE: 16 FINAL DISCHARGE - NET DATA DISCHARGED INTO: 02/004/5130 TWELVE MILE CR.
INCLUDES CONTROL POINTS: 0300 0400
DATA FOR 1986

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
RESIDUE PARTIC.	ACTUAL	4.81	157.5	315.5	452.269	363.589	2.82	695.37	13.4	283.806	0	32.9	5.8	194.0	
KG /DAY (RSP)	GUIDELINE	131.2	214.8	391.1	304.9	540.0	9.7	447.7	574.3	483.8		282.0	14.1	346.7	2
SOLVENT EXTRACT.	ACTUAL	58.75	43.7	19.8	1.49	0.78	21.616	0.032	355.664	7.747	0	4.7	18.62	44.4	
KG /DAY (SOLEXT)	GUIDELINE	131.2	214.8	391.1	304.9	540.0	9.7	447.7	574.3	483.8		282.0	14.1	346.7	2

NOTE: PH LIMIT 5.5-9.5, 0* INDICATES INTAKE EXCEEDED DISCHARGE, S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Spruce Falls Power and Paper Co. Ltd. INDUSTRIAL SECTOR: Pulp and Paper Mill
& PLANT LOCATION: Kapuskasing

RECEIVING WATERBODY: DIRECT: Kapuskasing R.
INDIRECT:

DESCRIPTION OF ACTIVITY: Converts softwood (Black spruce, Balsam fir, Jack pine) logs and chips into newsprint by 3 different processes - stone groundwood, TMP and Magnefite (Magnefite has spent sulphite liquor recovery). Hydrosulphite is used to brighten the newspaper.

EFFLUENT QUALITY: Contains suspended solids (bark, wood and paper) and many dissolved organics

EFFLUENT TREATMENT: Two clarifiers - one for the woodroom and one for total mill effluent (enclosed) are used to remove solids.

DISCHARGE TYPE: Continuous outfall.

COMMENTS:
The mill was out of compliance during a six day period (March 18 to March 23, inclusive) for their 30 consecutive day average for BOD5. The limit was 30 tonnes per day and the values ranged from 31.2 to 30.3 during that time. As well, the company is presently under investigation for violating a Control Order requirement stating that suspended solids not exceed twice the concentration equivalent. An exceedance occured on March 5, 1986. This occurred when the company discharged 37 tonnes (37,000 kg/day) of stock from holding tanks during a maintenance day. At that time, the clarifiers were shut down, and the stock discharged to the Kapuskasing River. Five compliance samples were collected during 1986, to see if the company met the concentration equivalent requirement in the Order. No exceedances were noted on the five days in question.
The present BOD Control Order requirements are: 40,000 kg/day, 30,000 kg/day between June 1 and Sept. 30 due to low flow rates, 30,000 kg/day averaged over 30 consecutive days any time of year. The present Suspended Solids requirements are 12,900 kg/day averaged over one operating week any time of year.

The mill's discharge is normally toxic to fish.Five bioassays conducted in 1986, indicated that, statistically, the percentage effluent required to kill 50% of the test fish by the end of four days exposure ranged from 18.7% to 33.1%.

IMIS NUMBER: 0001340009 SIC CODE: 031 MOE REGION: Northeast DISTRICT: Timmins

10/06/87

000134-00-0(9) SPRUCE FALLS POWER AND PAPER CO LTD
CONTROL POINT: 0100 DATA FOR 1986

REPORT DATE: 25 JUN 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	76900	78100	87000	85700	86900	95200	104500	111900	103500	102200	78000	86500	91366.66	
M3 /DAY (FTFLOW)	GUIDELINE														
BOD 5 DAY	ACTUAL	25300.00	26900.00	29000.00	24600.00	23800.00	24600.00	25100.00	24600.00	25400.00	24100.00	22200.00	24000.00	24966.60	
KG /DAY (BOD5)	GUIDELINE	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	6
RESIDUE PARTIC.	ACTUAL	7200.00	6300.00	6900.00	8400.00	8400.00	5900.00	6200.00	5600.00	8500.00	6700.00	4700.00	6000.00	6733.33	
KG /DAY (RSP)	GUIDELINE	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Stanley Hardware Div. of Stanley Canada Inc., New Hamburg

INDUSTRIAL SECTOR: Metal, Plastic Fabricating and Finishing

RECEIVING WATERBODY: DIRECT: Nith River to Grand River
INDIRECT: 203 km to Lake Erie

DESCRIPTION OF ACTIVITY: Makes tools, plates hardware, etc.

EFFLUENT QUALITY: Contains heavy metals and cyanide.

EFFLUENT TREATMENT: Chrome reduction, cyanide destruction, neutralization and sedimentation.

DISCHARGE TYPE: five day continuous flow 7 am to 12:00 pm to a storm sewer

COMMENTS:

Not in compliance. Company had been in compliance prior to MOE's more stringent 1985 limits and 100% production increase of 1985 - 1986. Company - reported discharge quality for 1986 shows compliance for cyanide, chromium, copper and pH, but persistent exceedances for nickel, zinc and suspended solids. Company action plan to regain compliance consists of reducing treatment plant load with zinc and nickel evaporators, reactive rinses, and filtration of acid and cleaner dumps plus adding flow-controlled polymer feed system. Evaporators and rinse modifications were installed in April 1987; filter and polymer control expected ready by mid August. MOE to conduct survey upon action plan completion. Monthly requirements are based on stream assimilation study.

IMIS NUMBER: 0001480003 SIC CODE: 301 MOE REGION: West Central DISTRICT: Cambridge

29/07/87

000148-00-0(3) STANLEY HARDWARE
CONTROL POINT: 0100 DATA FOR 1986
FLOW/LOADING PARAMETERS

REPORT DATE: 29 JUL 87

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	290	290	290	290	290	290	290	300	300	300	300	300	294	
M3 /DAY (FTFLOW)	REQUIREMENT	304	304	304	304	304	304	304	304	304	304	304	304	304	
CYANIDE AVAIL	ACTUAL	0.012	0.009	0.009	0.009	0.009	0.01	0.03	0.009	0.015	0.012	0.012	0.009	0.012	
KG /DAY (CCNAUR)	REQUIREMENT	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027	1
CHROMIUM UNF.TOT.	ACTUAL	0.072	0.061	0.046	0.09	0.043	0.03	0.02	0.018	0.021	0.024	0.015	0.015	0.038	
KG /DAY (CRUT)	REQUIREMENT	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	
COPPER UNF.TOT.	ACTUAL	0.18	0.078	0.043	0.333	0.159	0.23	0.09	0.126	0.273	0.153	0.225	0.111	0.17	
KG /DAY (CUUT)	REQUIREMENT	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	1
NICKEL UNF.TOT.	ACTUAL	0.261	0.357	0.67	0.824	0.223	0.26	0.27	0.315	0.37	0.39	0.426	0.357	0.39	
KG /DAY (NIUT)	REQUIREMENT	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	12
PH	ACTUAL	8.4	8.9	8.82	9.1	8.9	9	8.8	9	8.8	8.7	8.6	8.6	8.80	
(PH)	REQUIREMENT														
RESIDUE PARTIC.	ACTUAL	3.04	2.9	5.8	7.54	2.75	5.66	5.22	5.4	4.5	5.25	3	5.55	4.72	
KG /DAY (RSP)	REQUIREMENT	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.56	4.56	7
ZINC UNF.TOT.	ACTUAL	0.307	0.226	0.294	0.884	0.505	1.19	0.36	0.405	0.399	0.249	0.618	0.447	0.49	
KG /DAY (ZNUT)	REQUIREMENT	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	12

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: St. Marys Paper Inc. INDUSTRIAL SECTOR: Pulp and Paper Mill
& PLANT LOCATION: Sault Ste. Marie
OWNERSHIP CHANGED June 1, 1984. Formerly known as: Abitibi Paper Company Ltd.

RECEIVING WATERBODY: DIRECT: St. Mary's River
INDIRECT:

DESCRIPTION OF ACTIVITY: Purchased Kraft pulp is added to the pulp made by the stone groundwood process to make paper specialties. Clay line was added Dec/84. Now a slush pulp multi-product mill (with no white-water return).

EFFLUENT QUALITY: Contains suspended solids (bark, clay, wood) and soluble organic compounds like sugars.

EFFLUENT TREATMENT: Bull screen preceedes clarifier with scum collector on overflow. Underflow solids are dewatered and burned. An internal recovery system removes excess clays.

DISCHARGE TYPE: Continuous through a submerged diffuser

COMMENTS:

In compliance with conditions of Certificate of Approval.

The mill's final effluent is normally toxic to fish. Two trout bioassays conducted in 1986 indicated that it would take, statistically, 19.0% and 23.8% effluent to kill 50% of the test fish by the end of the four day exposure.

IMIS NUMBER: 0000860304 SIC CODE(S): 271 MOE REGION: Northeast DISTRICT: Sault Ste. Marie

26/08/87

000086-03-0(4) ST. MARYS PAPER INC.
CONTROL POINT: 0100 DATA FOR 1986

REPORT DATE: 28 JUL 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	25505.00	24590.00	28205.00	27026.00	30748.00	29141.00	29811.00	26959.00	26271.00	27805.00	27948.00	26063.00	27506.00	
M3 /DAY (FTFLOW)	GUIDELINE														
BOD 5 DAY	ACTUAL	1760.00	2800.00	3800.00	4400.00	3600.00	2700.00	2870.00	2500.00	2700.00	1900.00	2500.00	2700.00	2853.00	
KG /DAY (BOD5)	GUIDELINE														
RESIDUE PARTIC.	ACTUAL	4200.00	3500.00	5700.00	4200.00	4000.00	4200.00	3000.00	3300.00	2400.00	2100.00	3200.00	2800.00	3550.00	
KG /DAY (RSP)	GUIDELINE														

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Stelco Inc.
& PLANT LOCATION: Hilton Works
Hamilton

INDUSTRIAL SECTOR: Iron and Steel

RECEIVING WATERBODY: DIRECT: Hamilton Harbour
INDIRECT: Lake Ontario

DESCRIPTION OF ACTIVITY: All phases of iron and steel production including coke making, ironmaking, steelmaking and rolling.

EFFLUENT QUALITY: Contains heavy metals and light organics.

EFFLUENT TREATMENT: Recycle, clarification, filtration, oil recovery and ion exchange.

DISCHARGE TYPE: continuous through five shore outfalls

COMMENTS:

Phenols not in compliance. Phenol reductions will be accomplished by re-routing #1 and #2 Interceptor sumps for treatment. Suspended solids exceeded requirement in seven of the twelve months as a result of upsets at oil treatment plant and pumping out of an excavation during construction of continuous caster. Construction is now completed and modifications at oil treatment plant have reduced upsets. As well, oil treatment plant effluent to be diverted to filter plant by December 1987 for further treatment. Since phosphorus and biochemical oxygen demand are consistently 98% below target loads, thses pollutants are not being reported. Effluent quality requirements for six of the eight pollutants were met (based on monthly average).

IMIS NUMBER: 0000950006 SIC CODE: 291 MOE REGION: West Central DISTRICT: Hamilton

28/07/87

000095-00-0(6) STELCO INC HAMILTON

S U M M A R Y FOR EMIS. TYPE: 16 FINAL DISCHARGE - NET DATA DISCHARGED INTO: 02/004/ LAKE ONTARIO

INCLUDES CONTROL POINTS: 0100 0200 0300 0400 0601 0602 1100 1200

DATA FOR 1986

REPORT DATE: 25 AUG 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	1004000	1056000	1092000	1018000	1077297	1074000	1061000	1062587	1013600	1040795	1102000	1079000	1056689	
M3 /DAY (FTFLOW)	GUIDELINE														
CYANIDE AVAIL	ACTUAL	28.07	35.35	45.27	51.19	35.7	100.9	125.8	118.4	7.6	190.5	99	13.5	70.94	
KG /DAY (CCNAUR)	REQUIREMENT	212	212	212	212	212	212	212	212	212	212	212	212	212	
CHEM. OX DEMAND	ACTUAL	9570	47508	132097	12207	1580	5568	122444	7330.5	14010	1667	8503	10538	31085	
KG /DAY (COD)	REQUIREMENT														
IRON UNF.TOT.	ACTUAL	3832	3723	6675	7317.4	891	278.1	384	282.6	547.4	456.9	1352	4517	2521	
KG /DAY (FEUT)	REQUIREMENT	10550	10550	10550	10550	10550	10550	10550	10550	10550	10550	10550	10550	10550	
NH3-N TOTAL	ACTUAL	16.2	0*	0*	424.6	0	0*	98.7	250.5	206	398	93.2	0*	134	
KG /DAY (NNHTUR)	REQUIREMENT														
PHENOLS UNF-REAC	ACTUAL	41.63	36.62	53.82	35.51	31.32	30.5	112.32	20.92	16.17	43.32	18.45	74.06	42.9	
KG /DAY (PHNOL)	REQUIREMENT	21.8	21.8	21.8	21.8	21.8	21.8	21.8	21.8	21.8	21.8	21.8	21.8	21.8	9
RESIDUE PARTIC.	ACTUAL	16406.6	44824	31211	32894.5	4962	7696.89	14721.5	14995	11252	16682	13571	20326	19129	
KG /DAY (RSP)	REQUIREMENT	15900	15900	15900	15900	15900	15900	15900	15900	15900	15900	15900	15900	15900	6
SOLVENT EXTRACT.	ACTUAL	7267.5	16099.3	10074.6	7569.51	1958.5	1086.1	3199.78	1718.9	2772.6	984.8	2716.36	0*	4579	
KG /DAY (SOLEXT)	REQUIREMENT	15900	15900	15900	15900	15900	15900	15900	15900	15900	15900	15900	15900	15900	1
ZINC UNF.TOT.	ACTUAL	45.4	180.289	120.05	63.36	26.24	19.5	20.8	0*	7	0.54	3.35	133.8	51.7	
KG /DAY (ZNUT)	REQUIREMENT	1055	1055	1055	1055	1055	1055	1055	1055	1055	1055	1055	1055	1055	

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Stelco Inc. Lake Erie Works, Nanticoke

INDUSTRIAL SECTOR: Iron and Steel

RECEIVING WATERBODY: DIRECT: Centre Creek
INDIRECT: 0.15 km to Lake Erie

DESCRIPTION OF ACTIVITY: Coke ovens with a by-product plant, blast furnace, basic oxygen furnace and a hot strip mill are used to make steel.

EFFLUENT QUALITY:

EFFLUENT TREATMENT: Final wastewater treatment consisting of equalization, clarification, alkaline breakpoint chlorination, filtration and final holding pond.

DISCHARGE TYPE: continuous through an open outfall

COMMENTS:

Suspended solids in final holding pond effluent not in compliance in October and December. Treatment and recirculation within plant is maximized. Best Practical Technology used to treat process wastewaters. Exceedance in process effluent caused by surface drainage entering final holding pond. Requirement for process effluent set by Certificate of Approval. Suspended solids loading requirement revised to 565.5 kg/day in July 1986. Sewage stabilization pond not in compliance for suspended solids during October. This exceedance likely caused by sampling problem or possibly algae growth in pond.

Final process effluent samples for fish toxicity collected on a monthly basis. Final effluent was non-toxic.

IMIS NUMBER: 0000950105 SIC CODE: 291 MOE REGION: West Central DISTRICT: Haldimand-Norfold/Brant

28/07/87

000095-01-0(5) STELCO INC, LAKE ERIE WORKS PROCESS EFFLUENT
CONTROL POINT: 0100 DATA FOR 1986

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	36028.8	33868.8	44409.6	41100.4	34992		41299.2	41385.6	41126.4	44928	36028.8	47692.8	40259.9	
M3 /DAY (FTFLOW)	REQUIREMENT														
CYANIDE AVAIL	ACTUAL	2.9	1.4	1.3	2.1	1.7		1.7	2.1	2.1	6.7	3.2	4.8	2.72726	
KG /DAY (CCNAUR)	GUIDELINE														
CYANIDE FREE	ACTUAL	2.2	1.7	1.8	2.1	1.7		2.1	2.1	2.5	2.2	1.8	2.4	2.05454	
KG /DAY (CCNFUR)	REQUIREMENT	2.6	2.6	2.6	2.6	2.6		2.6	2.6	2.6	2.6	2.6	2.6	2.6	
CADMIUM UNF.TOT.	ACTUAL					0.17		0.21	0.21	0.33	0.27	0.29	0.14	0.231428	
KG /DAY (CDUT)	GUIDELINE														
CHLORINE FREE	ACTUAL	3.6	3.4	4.4	4.1	3.5		4.1	4.1	4.1	4.5	3.6	4.8	4.01817	
KG /DAY (CLFREE)	REQUIREMENT	13.1	13.1	13.1	13.1	13.1		13.1	13.1	13.1	13.1	13.1	13.1	13.1	
CHROMIUM UNF.TOT.	ACTUAL	0.4	0.3	0.44	0.8	0.7		0.8	0.8	0.41	0.9	0.7	0.5	0.613635	
KG /DAY (CRUT)	REQUIREMENT	6.5	6.5	6.5	6.5	6.5		6.5	6.5	6.5	6.5	6.5	6.5	6.5	
COPPER UNF.TOT.	ACTUAL	1.08	0.34	0.44	0.41	0.35		0.41	0.41	0.41	0.45	0.72	0.5	0.501817	
KG /DAY (CUUT)	REQUIREMENT	2.87	2.87	2.87	2.87	2.87		2.87	2.87	2.87	2.87	2.87	2.87	2.87	
IRON UNF.TOT.	ACTUAL	23.4	15.9	20.9	24.7	12.6		20.2	17.8	16.9	29.2	28.4	32.4	22.0363	
KG /DAY (FEUT)	REQUIREMENT	39.2	39.2	39.2	39.2	39.2		39.2	39.2	39.2	39.2	39.2	39.2	39.2	
NH3-N TOTAL	ACTUAL	8.6	7.1	7.8	9	8		13.6	9.9	4.1	11.2	6.5	9.5	8.66362	
KG /DAY (NNHTUR)	REQUIREMENT	24.8	24.8	24.8	24.8	24.8		24.8	24.8	24.8	24.8	24.8	24.8	24.8	
LEAD UNF.TOT.	ACTUAL	4	2.4	3.1	3.3	2.4		3.7	2.5	2.1	2.7	3.6	2.4	2.92726	
KG /DAY (PBUT)	REQUIREMENT	10.5	10.5	10.5	10.5	10.5		10.5	10.5	10.5	10.5	10.5	10.5	10.5	

CONTROL POINT: 0100 DATA FOR 1986
FLOW/LOADING PARAMETERS — PROCESS EFFLUENT

PH (PH)		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVERAGE	EXCEEDANCES
PHENOLS UNF-REAC KG /DAY (PHNOL)	ACTUAL	0.04	0.06	0.09	0.05	0.05		0.05	0.07	0.12	0.04	0.04	0.3	0.082727	
	GUIDELINE REQUIREMENT	0.47	0.47	0.47	0.47	0.47		0.47	0.47	0.47	0.47	0.47	0.47	0.47	
PHOSPHOR UNF.TOT. KG /DAY (PPUT)	ACTUAL	4.7	3.4	4.4	4.1	3.5		5	4.1	4.1	4.5	3.2	7.2	4.38181	
	REQUIREMENT	26.1	26.1	26.1	26.1	26.1		26.1	26.1	26.1	26.1	26.1	26.1	26.1	
RESIDUE PARTIC. KG /DAY (RSP)	ACTUAL	371	305	351	386	346		273	377	350	512	338	840	404.454	
	REQUIREMENT	392	392	392	392	392		565.5	565.5	565.5	565.5	565.5	565.5	446	1
SOLVENT EXTRACT. KG /DAY (SOLEXT)	ACTUAL	63.1	50.8	124	123	87.5		103	132	74	126	54	148	98.6726	
	REQUIREMENT	164.6	164.6	164.6	164.6	164.6		164.6	164.6	164.6	164.6	164.6	164.6	164.6	
ZINC UNF.TOT. KG /DAY (ZNUT)	ACTUAL	4.7	1.4	2.7	4.1	5.2		2.5	2.5	3.3	4.5	2.2	3.8	3.35453	
	REQUIREMENT	15.7	15.7	15.7	15.7	15.7		15.7	15.7	15.7	15.7	15.7	15.7	15.7	

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

000095-01-0(5) STELCO INC, LAKE ERIE WORKS SEWAGE STABILIZATION POND
CONTROL POINT: 0200 DATA FOR 1986

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL		3481.92	691.2				5356.8			2548.8			1098	
M3 /DAY (FTFLOW)	REQUIREMENT														
BOD 5 DAY	ACTUAL		21.6	4.3			13.4	33.2			15.3			7.98	
KG /DAY (BOD5)	GUIDELINE		52.2288	10.368				80.352			38.232			16.47	
PHOSPHOR UNF.TOT.	ACTUAL		0.7	0.14			1.9	4.8			1.5			0.82	
KG /DAY (PPUT)	GUIDELINE		3.48192	0.6912				5.3568			2.5488			1.10	
RESIDUE PARTIC.	ACTUAL		46.3	9.2			29.2	72.3			125			25.84	
KG /DAY (RSP)	GUIDELINE		52.2288	10.368				80.352			38.232			16.47	1

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Stelco Page Hersey Works Welland

INDUSTRIAL SECTOR: Iron and Steel

RECEIVING WATERBODY: DIRECT: Welland Canal
INDIRECT:

DESCRIPTION OF ACTIVITY: Small diameter seamless pipe is made from steel billets.

EFFLUENT QUALITY:

EFFLUENT TREATMENT:

DISCHARGE TYPE: continuous through a diffuser

COMMENTS:

In compliance. Company treating effluent for PCB contamination in sand/carbon filter system. Treatment system is approved under REG 11/82 Direction.

IMIS NUMBER: 0000950303 SIC CODE: 292 MOE REGION: West Central DISTRICT: Welland

10/06/87

000095-03-0(3) STELCO PAGE HERSEV
CONTROL POINT: 0300 DATA FOR 1986

REPORT DATE: 25 JUN 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	12570	12440	12240	11140	11960	12180	11000	12990	12140	12430	12360	9345	11899.5	
M3 /DAY (FTFLOW)	GUIDELINE														
IRON UNF.TOT.	ACTUAL	11.28	11.2	8.6	5.6	2.39	0.487	4.4	11.7	2.43	3.73	3.7	1.9	5.62	
KG /DAY (FEUT)	GUIDELINE	62.85	62.2	61.2	55.7	59.8	60.9	55	64.95	60.7	62.15	61.8	46.725	59.50	
PH	ACTUAL	8.4	8.54	8.43	8.33	8.04	7.89	7.78	7.89	8.02	7.91	8.23	7.68	8.10	
(PH)	GUIDELINE														
RESIDUE PARTIC.	ACTUAL	3.77	34.84		10	23.9							0	14.50	
KG /DAY (RSP)	GUIDELINE	188.55	186.6		167.1	179.4							140.175	178.49	
SOLVENT EXTRACT.	ACTUAL	2.51	1.24					5.5					0	2.31	
KG /DAY (SOLEXT)	GUIDELINE	188.55	186.6		167.1	179.4		165					140.175	178.49	

NOTE: PH LIMIT 5.5-9.5, 0* INDICATES INTAKE EXCEEDED DISCHARGE, S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Stelco Welland Tube Works Welland

INDUSTRIAL SECTOR: Iron and Steel

RECEIVING WATERBODY: DIRECT: Lyons Creek to Welland River to Niagara River
INDIRECT:

DESCRIPTION OF ACTIVITY: Flat steel is made into very large diameter pipe.

EFFLUENT QUALITY:

EFFLUENT TREATMENT: Oil water separation.

DISCHARGE TYPE: co..tinuous through an open outfall

COMMENTS:

In compliance.

IMIS NUMBER: 0000950204 SIC CODE: 292 MOE REGION: West Central DISTRICT: Welland

10/06/87

000095-02-0(4) STELCO WELLAND TUBES
CONTROL POINT: 0100 DATA FOR 1986

REPORT DATE: 25 JUN 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	914.2	464.8	518.5	319.9	338.6	380.6	401.3	613.4	500.2	650.5	306.7	123.3	461	
M3 /DAY (FTFLOW)	GUIDELINE														
IRON UNF.TOT.	ACTUAL	0.366	0.7	0.62	0.29	0.305	0.342	0.843	0.307	0.15	0.65	0.4	0.09	0.42	
KG /DAY (FEUT)	GUIDELINE	4.571	2.324	2.5925	1.5995	1.693	1.903	2.0065	3.067	2.501	3.2525	1.5335	0.6165	2.31	
PH	ACTUAL	7.95	7.96	7.02	7.66	6.89	7.16	7.66	7.11	7.76	7.6	7.87	7.67	7.53	
(PH)	GUIDELINE														
RESIDUE PARTIC.	ACTUAL	12.98	2.79	4.1	3.33	2.74	8.94	6.5	5.52	4.35	2.28	2.61	0.88	4.75	
KG /DAY (RSP)	GUIDELINE	13.713	6.972	7.7775	4.7985	5.079	5.709	6.0195	9.201	7.503	9.7575	4.6005	1.8495	6.92	2
SOLVENT EXTRACT.	ACTUAL		4.51	1.3	1.8	0.54	1.29	0.642	1.17	0.5	1.3	0.77	0.123	1.27	
KG /DAY (SOLEXT)	GUIDELINE		6.972	7.7775	4.7985	5.079	5.709	6.0195	9.201	7.503	9.7575	4.6005	1.8495	6.92	

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Strathcona Paper Company, Camden East Twp.

INDUSTRIAL SECTOR: Pulp and Paper Mill

RECEIVING WATERBODY: DIRECT: Napanee River
INDIRECT: Lake Ontario (Bay of Quinte)

DESCRIPTION OF ACTIVITY: Wastepaper is cleaned and repulped to form coated paperboards.

EFFLUENT QUALITY:

EFFLENT TREATMENT: "Savealls" and a new (1986) whitewater recycle system plus a kraft clarifier have reduced by over 90% the solids discharged to a system of seven sedimentation and aeration lagoons (75 horespower). During the summer months the overflow from the lagoons is sprayed on fields.

DISCHARGE TYPE: Two continuous on-shore outfalls.

COMMENTS:

New flow monitoring installation and single outfallto be installed in 1987; Certificate of Approval #4-024-86-876 issued May '87. Note 1 - Permissible BOD5 loadings are a function of Napanee River flows. Permitted loadings are detailed on Certificate of Approval #4-024-86-876 dated May 28, 1987. Suspended solids guideline based on Federal Regulation.

A bioassay conducted in 1986, indicated that the effluent was not acutely lethal to test fish.

IMIS NUMBER: 0001740000 SIC CODE: 271 MOE REGION: Southeast DISTRICT: Kingston

28/07/87

S U M M A R Y FOR EMIS. TYPE: 04 FINAL DISCHARGE - GROSS DATA DISCHARGED INTO: / / HYDROLOGIC CODE (STORET)
INCLUDES CONTROL POINTS: 0100 0200
DATA FOR 1986 000174-00-0(0) STRATHCONA PAPER COMPANY
REPORT DATE: 28 JUL 87

FLOW/LOADING	PARAMETERS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AVERAGE EXCEEDANCES
FLOW	ACTUAL					3900	4144	2455	3052	3466	3392	3216	3565	3398.75
M3 /DAY (FTFLOW)	GUIDELINE													
BOD 5 DAY	ACTUAL	4^2		586	374	387	186	185	213	204	205	174	427	303.909
KG /DAY (BOD5)	REQUIREMENT	SC		SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC
RESIDUE PARTIC.	ACTUAL	243		120	72	201	164	126	171	314	228	181	212	184.7
KG /DAY (RSP)	GUIDELINE	SC		SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC

NOTE: PH LIMIT 5.5-9.5, 0* INDICATES INTAKE EXCEEDED DISCHARGE, S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Suncor Sunoco Group Sarnia

INDUSTRIAL SECTOR: Petroleum Refining

RECEIVING WATERBODY: DIRECT: St. Clair River
INDIRECT:

DESCRIPTION OF ACTIVITY: Crude oil is converted into a wide range of petroleum products.

EFFLUENT QUALITY: Contains soluble and insoluble compounds from crude oil at the parts per billion level.

EFFLUENT TREATMENT:

DISCHARGE TYPE: continuous at shore

COMMENTS:

In compliance.

IMIS NUMBER: 0000490102 SIC CODE: 3651 MOE REGION: Southwest DISTRICT: Sarnia

22/07/87

000049-01-0(2) SUNCOR SUNOCO GROUP
CONTROL POINT: 0200 DATA FOR 1986

REPORT DATE: 23 JUL 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	71932.8	81470.4	81079.5	78179.1	96513.4	78115.4	103801	80324.8	127200	127445	118953	119808	97068.3	
M3 /DAY (FTFLOW)	GUIDELINE														
CHLORIDE UNF.REAC	ACTUAL	2321	2342	2516	1089	2441	2109	2329	3172	4135	2561	3273	3288	2631.33	
KG /DAY (CLIDUR)	GUIDELINE														
NH3-N TOTAL	ACTUAL	12	24	64	6	71	17	23	16	50	27	44	-5	33.25	
KG /DAY (NNHTFR)	GUIDELINE	719.327	814.704	810.795	781.791	965.134	781.154	1038	803.248	1272	1274.45	1189.53	1198.07	970.68	
PHENOLS UNF-REAC	ACTUAL	0.58	0.29	0.67	0.13	0.76	0.28	0.19	0.22	0.42	0.14	0.26	0.26	0.35	
KG /DAY (PHNOL)	GUIDELINE	1.43865	1.62941	1.62159	1.56358	1.93027	1.56231	2.07601	1.60649	2.544	2.5489	2.37905	2.39615	1.94	
RESIDUE FILTERED	ACTUAL	6315	5984	5396	6215	7719	6581	7895	5794	8501	6904	7466	8057	6902.25	
KG /DAY (RSF)	GUIDELINE														
RESIDUE PARTIC.	ACTUAL	193	150	312	302	378	952	460	467	335	221	330	354	362.80	
KG /DAY (RSP)	GUIDELINE	1079	1222.06	1216.19	1172.68	1447.7	1171.73	1557.01	1204.87	1908	1911.67	1784.29	1797.11	1456.02	
SOLVENT EXTRACT.	ACTUAL	24	0	97	63	106	86	81	47	119	67	105	79	72.83	
KG /DAY (SOLEXT)	GUIDELINE	719.327	814.704	810.795	781.791	965.134	781.154	1038	803.248	1272	1274.45	1189.53	1198.07	970.68	
SULPHIDE UNF.REAC	ACTUAL	0.3	0.2	0.5	0	0	0	0.2	0.1	0.25	0.2	0	0.7	0.20	
KG /DAY (SSIDUR)	GUIDELINE														
CARBON TOTAL	ACTUAL	166		145	122	292	152	244	214	292	2581	173	170	411.91	
KG /DAY (TOC)	GUIDELINE														

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Teck-Corona Inc.
& PLANT LOCATION: Marathon

INDUSTRIAL SECTOR: Metal Mining, Smelting and Refining

RECEIVING WATERBODY: DIRECT: Lim Lake
INDIRECT: Lake Superior

DESCRIPTION OF ACTIVITY: Gold mining and milling

EFFLUENT QUALITY: Heavy metals, suspended solids, pH, cyanide

EFFLUENT TREATMENT: Approved treatment utilizing sulphur dioxide/air process and a metal precipitation stage utilizing precipitation with ferric sulphate. Disposal area decant to Lim Lake. Mill site sedimentation pond effluent to Cedar Creek.

DISCHARGE TYPE: continuous

COMMENTS:

There was one exceedance of the copper guideline in December. Treatment process modifications are being examined.

The final treated effluent is normally not acutely lethal to fish. Seven of nine bioassays in 1986 indicated the final effluent was not acutely lethal to fish. The other two bioassays indicated it would take, statistically, 81% and 10% effluent to kill 50% of the test fish by the end of four days exposure.

IMIS NO.: 0031750003 SIC CODE: MOE REGION: Northwest DISTRICT: Thunder Bay

25/08/87

003175-00-0(3) TECK-CORONA OPERATING CORPORATION
CONTROL POINT: 0100 DATA FOR 1986

REPORT DATE: 05 AUG 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL									21028	21322	20500	17996	20212	
M3 /DAY (FTFLOW)	GUIDELINE														
ACIDITY TOTAL	ACTUAL													0	
KG/D (ACDT)	GUIDELINE														
ALK TOTAL	ACTUAL													0	
KG/D AS CACO3	GUIDELINE														
ARSENIC UNF.TOT.	ACTUAL									0.1262	0.1066	0.1230	0.1080	0.041	
KG/D (ASUT)	GUIDELINE									10.5140	10.6610	10.2500	8.9980	4.491	
CYANIDE FREE	ACTUAL									0.8621	1.1514	2.2550	16.3764	1.649	
KG/D (CCNFUR)	GUIDELINE														
COPPER UNF.TOT.	ACTUAL									0.4626	0.5970	2.0090	6.1186	2.297	
KG/D (CUUT)	GUIDELINE									6.3084	6.3966	6.1500	5.3988	2.695	1
IRON UNF.TOT.	ACTUAL									4.2056	7.0363	10.4550	5.7587	3.344	
KG/D (FEUT)	GUIDELINE									21.028	21.322	20.5	17.996	8.983	
HARDNESS TOTAL	ACTUAL													0	
KG/D (HARDT)	GUIDELINE														
MERCURY UNF.TOT.	ACTUAL													0	
UG/L (HGUT)	GUIDELINE														
NICKEL UNF.TOT.	ACTUAL													0	
KG/D (NIUT)	GUIDELINE														
NH3-N FIL.REAC	ACTUAL													0	
KG/D (NNH3FR)	GUIDELINE														
LEAD UNF.TOT.	ACTUAL													0	
KG/D (PBUT)	GUIDELINE														
PH	ACTUAL													7.938	
(PH)	GUIDELINE														
RESIDUE PARTIC.	ACTUAL									145.1	68.2	46.0	21.6	70.2	
KG/D (RSP)	GUIDELINE									315.4	319.8	307.5	269.9	134.7	
ZINC UNF.TOT.	ACTUAL									0.126	0.107	0.205	0.108	0.059	
KG/D (ZNUT)	GUIDELINE									10.514	10.661	10.25	8.998	4.491	

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE, S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Tend-R-Fresh Div. Maple Leaf Mills Poultry Products Inc., Petersburg

INDUSTRIAL SECTOR: Food and Beverage

RECEIVING WATERBODY: DIRECT: Alder Creek to Nith River to Grand River
INDIRECT: 195 km to Lake Erie

DESCRIPTION OF ACTIVITY: Birds are slaughtered, processed, readied for retail sale.

EFFLUENT QUALITY: Contains dissolved organics and phosphorus.

EFFLUENT TREATMENT: Screening, aeration, phosphorus removal, sedimentation and chlorination.

DISCHARGE TYPE: seven day continuous flow through an open outfall

COMMENTS:

Not in compliance for first part of 1986. Treatment plant modifications became fully operational in May 1986 and company reported discharge quality shows general compliance thereafter (except for June, due to sludge pump failure) until December 1986. No data available for July '86 as samples were allegedly lost. MOE survey of fall 1986 found company in compliance except for ammonium-nitrogen. Company consultant conducted a treatment process upgrading study Feb. - Apr. '87. Study found nitrification inadequate. Influent waste characterization program continues in order to assess treatment plant overloading. Company has started a sludge land disposal study, and has requested its consultant to submit a detailed proposal by early August for relining aeration basin. Monthly requirements are those of Certificate of Approval.

IMIS NUMBER: 0001490002 SIC CODE: 1012 MOE REGION: West Central DISTRICT: Cambridge
29/07/87

000149-00-0(2) TEND-R-FRESH DIVISION
CONTROL POINT: 0100 DATA FOR 1986

REPORT DATE: 29 JUL 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	1400	1818	1414	1312	1438	1268		1083	1193	1350	1640	1300	1383.27	
M3 /DAY (FTFLOW)	REQUIREMENT	2272	2272	2272	2272	2272	2272		2272	2272	2272	2272	2272	2272	
BOD 5 DAY	ACTUAL	41.66	57.3	7.2	4.99	8.63	31.7		4	8.6	13.3	20.5	21.1	19.9253	
KG /DAY (BOD5)	REQUIREMENT	32	32	32	32	32	32		32	32	32	32	32	32	2
NH3-N TOTAL	ACTUAL											4.9	14.9	9.89998	
KG /DAY (NNHTFR)	REQUIREMENT											8	8	8	1
NH3-N UNF.REAC	ACTUAL								4.8	5.7	8.9			6.47	
KG /DAY (NNH3UR)	REQUIREMENT								8	8	8			8	1
PH	ACTUAL	7.4	7.3	6.85	7.25	7	7.45		6.8	6.8	7.4	7	6.8	7.1	
(PH)	REQUIREMENT														
PHOSPHOR UNF.TOT.	ACTUAL	7.1	10	1.7	0.97	0.61	1.2		0.54	1.8	0.91	1.57	1.33	2.5209	
KG /DAY (PPUT)	REQUIREMENT	1.6	1.6	1.6	1.6	1.6	1.6		1.6	1.6	1.6	1.6	1.6	1.6	4
RESIDUE PARTIC.	ACTUAL	63	100	26.2	19.68	12.94	142		8.9	19.1	14.5	25.4	35.1	42.4381	
KG /DAY (RSP)	GUIDELINE	32	32	32	32	32	32		32	32	32	32	32	32	4
SOLVENT EXTRACT.	ACTUAL	21.3	46.1	16.7	26.63	12.5	32.9		6.79	9.2	15.8	17.1	8.2	19.3835	
KG /DAY (SOLEXT)	REQUIREMENT	24	24	24	24	24	24		24	24	24	24	24	24	3

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Texaco Canada Ltd Port Credit

INDUSTRIAL SECTOR: Petroleum Refining

RECEIVING WATERBODY: DIRECT: Lake Ontario
INDIRECT:

DESCRIPTION OF ACTIVITY:

EFFLUENT QUALITY:

EFFLUENT TREATMENT: Primary (API separator and settling pond).

DISCHARGE TYPE: Continuous

COMMENTS:

Suspended solids exceedances due to decommissioning activities. Expect complete compliance in 1987.

IMIS NO.: 0000520106 SIC CODE: 365 MOE REGION: Central DISTRICT: Halton-Peel

18/06/87

000052-01-0(6) TEXACO CANADA INC. MISSISSAUGA REPORT DATE: 16 AUG 87
CONTROL POINT: 0100 DATA FOR 1986

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW M3 /DAY (FTFLOW)	ACTUAL REQUIREMENT	6819.13	6819.13	6819.13	6819.13	6819.13	6819.13	6819.13	6819.13	6819.13	6819.13		6819.13	6819.13	
NH3-N FIL.REAC KG /DAY (NNH3FR)	ACTUAL GUIDELINE	0 68.1913												0 68.2	
PH (PH)	ACTUAL GUIDELINE	6.9	7.7	7.6	7.75	8	7.8	7.45	7.2	7.3	7.5		7.55	6.9	
PHENOLS UNF-REAC KG /DAY (PHNOL)	ACTUAL GUIDELINE	0.08 0.136	0.025 0.136	0.07 0.136	0.035 0.136	0.01 0.136	0.01 0.136	0.025 0.136	0.04 0.136	0.02 0.136	0 0.136		0.025 0.136	0.028 0.136	
RESIDUE PARTIC. KG /DAY (RSP)	ACTUAL GUIDELINE	136.2 102.287	1.362 102.287	0 102.287	0 102.287	0 102.287	6.81 102.287	0 102.287	2.72 102.287	130.75 102.287	13.62 102.287		19.07 102.287	25.88 93.76	2
SOLVENT EXTRACT. KG /DAY (SOLEXT)	ACTUAL GUIDELINE	13.6 68.1913	1.362 68.1913	0 68.1913	10.22 68.1913	0.68 68.1913	0 68.1913	2.73 68.1913	0.68 68.1913	5.45 68.1913	1.36 68.1913		2.73 68.1913	3.23 62.51	

NOTE: PH LIMIT 5.5-9.5, 0* INDICATES INTAKE EXCEEDED DISCHARGE, S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Texaco Canada Inc. (Nanticoke Refinery) Jarvis

INDUSTRIAL SECTOR: Petroleum Refining

RECEIVING WATERBODY: DIRECT: Lake Erie
INDIRECT:

DESCRIPTION OF ACTIVITY: Crude oil is converted into a wide range of petroleum products.

EFFLUENT QUALITY: Contains soluble and insoluble compounds from crude oil at the parts per billion level.

EFFLUENT TREATMENT: Primary oil separation, equalization, dissolved air flotation, biological treatment, clarification and filtration, and final holding ponds.

DISCHARGE TYPE: continuous through a submerged diffuser

COMMENTS:

In compliance. Degree of air cooling is maximized.

IMIS NUMBER: 0000520205 SIC CODE: 3651 MOE REGION: West Central DISTRICT: Haldimand-Norfolk/Brant

15/05/87

000052-02-0(5) TEXACO CANADA INC. NANTICOKE REFINERY

REPORT DATE: 28 JUL 87

CONTROL POINT: 0200 DATA FOR 1986

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	3864.63	3539.13	3725.52	3795.53	3113.16	1976.18	2373.96	1682.05	1560.21	4078.29	4160.13	9597.7	3622.2	
M3 /DAY (FTFLOW)	REQUIREMENT														
NH3-N TOTAL	ACTUAL	2.2045	0.2903	0.3311	0.3130	0.1905	0.1315	0.1542	0.6759	1.1294	0.1950	1.2020	11.2944	1.5093	
KG /DAY (NNHTUR)	GUIDELINE	38.6463	35.3913	37.2552	37.9553	31.1316	19.7618	23.7396	16.8205	15.6021	40.7829	41.6013	95.9770	36.2220	
PHENOLS UNF-REAC	ACTUAL	0.0181	0.0136	0	0.0091	0.0091	0.0045	0.0091	0.0091	0.0045	0.0136	0	0.0091	0.0083	
KG /DAY (PHNOL)	GUIDELINE	0.0773	0.0708	0.0745	0.0759	0.0623	0.0395	0.0475	0.0336	0.0312	0.0816	0.0832	0.1920	0.0724	
RESIDUE PARTIC.	ACTUAL	0	0	3.8374	0	10.4235	0.3266	4.4588	0	0	0	0	0	1.5872	
KG /DAY (RSP)	GUIDELINE	57.9695	53.0870	55.8828	56.9330	46.6974	29.6427	35.6094	25.2307	23.4032	61.1744	62.4020	143.9655	54.3330	
SOLVENT EXTRACT.	ACTUAL	3.3475	1.5740	0	0	1.4061	1.8189	2.0457	1.2066	1.9414	2.0366	7.7564	9.0718	2.6837	
KG /DAY (SOLEXT)	GUIDELINE	38.6463	35.3913	37.2552	37.9553	31.1316	19.7618	23.7396	16.8205	15.6021	40.7829	41.6013	95.9770	36.2220	
SULPHIDE UNF.REAC	ACTUAL	0.108862	0	0.145149	0.009072	0.090718	0	0.013608	0	0.009072	0	0	0	0.0314	
KG /DAY (SSIDUR)	GUIDELINE														

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: The Algoma Steel Corporation Ltd. INDUSTRIAL SECTOR: Iron and Steel
& PLANT LOCATION: Sault Ste. Marie

RECEIVING WATERBODY: DIRECT: St. Mary's River
INDIRECT: East Davignon Creek

DESCRIPTION OF ACTIVITY: Iron (blast furnaces & foundry) from coal (coke) limestone and iron concentrates/pellets and steel.

EFFLUENT QUALITY: Contains suspended solids (coal, coke, iron) and coal tar compounds (ammonia, cyanide, oil and grease, phenols)

EFFLUENT TREATMENT: Clarifiers, settling basins and brill skimmers.

DISCHARGE TYPE: continuous; 7 outfalls; terminal basin discharges through a submerged diffuser.

COMMENTS:

An Amending Control Order was issued on November 4, 1986 establishing the following abatement schedule and limits:
Terminal Basin - June 30, 1988; Ammonia and cyanide limited in combination based on toxicity considerations
- Dec. 31, 1986 Solvent Extractables 1589 kg/day; susp. solids 7355 kg/day
- Jun. 30, 1989 Phenolics 22.7 kg/day
- Mar. 31, 1990 Solvent Extractables 1023 kg/day; susp. solids 5108 kg/day

In accordance with the previous Control Order, a system was in place by April 5, 1986, designed to reduce 24" Cold Mill Sewer contaminants as follows: suspended solids 15 mg/l; solvent extractables 15 mg/l, dissolved iron 1mg/l.

A sample collected in 1986 from the Terminal basin discharge was determined to have been non-acutely lethal to fish, however a sample from the Bar & Strip effluent was toxic to fish. Statistically , it would take 59.7% effluent to kill 50% of the test fish at the end of a four day exposure.

IMIS NUMBER: 0000040006 SIC CODE(S): 291, 292, 298 MOE REGION: Northeast DISTRICT: Sault Ste. Marie
26/08/87

000004-00-0(6) THE ALGOMA STEEL CORPORATION LIMITED STEEL WORKS SAULT STE MARIE
S U M M A R Y FOR EMIS. TYPE: 04 FINAL DISCHARGE - GROSS DATA DISCHARGED INTO: 02/002/ LAKE HURON
INCLUDES CONTROL POINTS: 0100 0200 0300 0400 0500 0600 0700
DATA FOR 1986

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	539383	536382	541201	524381	526199	519017	490513	477057	488422	485240	488422	480694	508076	
M3 /DAY (FTFLOW)	GUIDELINE														
CYANIDE FREE	ACTUAL	102.7	63.1	25.3	83.9	87	41	44	53	40	53	81	77	62.5832	
KG /DAY (CCNFUR)	GUIDELINE	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	
CHEM. OX DEMAND	ACTUAL	8688.79	8381	25053	33737.6	8021	23073	8524	11947	9610	8841	22981	16080	15411.4	
KG /DAY (COD)	GUIDELINE														
IRON FIL.TOT.	ACTUAL	108	284.1	404.7	3.8	40	2	0.5	0.4	1	644	70	0.3	129.9	
KG /DAY (FEFT)	GUIDELINE	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	
IRON UNF.TOT.	ACTUAL	4707.69	5088.39	5895.19	3873	4510	5303	1880	1367	1732	3349	16000	2511.6	4684.73	
KG /DAY (FEUT)	GUIDELINE														
NH3-N TOTAL	ACTUAL	6034.89	4826.59	3916	5685.49	4618	3179	4146	2487	3171	3061	3605	3182	3992.65	
KG /DAY (NNHTUR)	GUIDELINE	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	
PH	ACTUAL	7.85713	7.67142	7.74284	7.95713	7.97142	7.87142	8.15713	8.17142	8.24284	8.32856	8.1857	8.2857	8.03689	
(PH)	GUIDELINE														
PHENOLS UNF-REAC	ACTUAL	151.377	114.377	114.377	147.03	182.33	105.3	137.93	33.23	34.23	23.4	51.83	62.03	96.4531	
KG /DAY (PHNOL)	GUIDELINE														
RESIDUE FILTERED	ACTUAL	55153.4	55063.6	59858.1	57066.5	46330	66821	34020	52555	47326	45379	44202	44077	50654.3	
KG /DAY (RSF)	GUIDELINE	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	
RESIDUE PARTIC.	ACTUAL	9109.59	8166.19	9060	10461.3	8433	7783	6818	7948	8156	10239	15260	9741	9264.58	
KG /DAY (RSP)	GUIDELINE	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	
SOLVENT EXTRACT.	ACTUAL	500.2	1283.49	1258.29	1636.59	1542.09	2550	1561	1470	2903	3902	3189	1646	1953.47	
KG /DAY (SOLEXT)	GUIDELINE	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	
SULPHIDE UNF.REAC	ACTUAL	124.7	64.8	38	105.2	84	35	34	33	34	34	34	33	54.4748	
KG /DAY (SSIDUR)	GUIDELINE														
SULPHATE UNF.REAC	ACTUAL	2086.59	2364.79	1182.39	1877.89	1878	1252	892	1090	545	1140	1190		1408.96	
KG /DAY (SSO4UR)	GUIDELINE														
ZINC FIL.TOT.	ACTUAL	43.1	43.1	38.3	29.9	28	24	48	24	17	11	35	16	29.7832	
KG /DAY (ZNFT)	GUIDELINE														

NOTE: PH LIMIT 5.5-9.5, 0* INDICATES INTAKE EXCEEDED DISCHARGE, S/C -SEE COMMENT

000004-00-0(6) THE ALGOMA STEEL CORPORATION LIMITED STEEL - TERMINAL BASIN
CONTROL POINT: 0700 DATA FOR 1986

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW M3 /DAY (FTFLOW)	ACTUAL	377773	380955	379591	362771	364589	349587	340950	331858	343223	340041	343223	335495	354171	
	GUIDELINE														
CYANIDE FREE KG /DAY (CCNFUR)	ACTUAL	94.4	61	19	79.8	84	38	41	30	34	34	69	64	54.0165	
	GUIDELINE	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	
CHEM. OX DEMAND KG /DAY (COD)	ACTUAL	8688.8	8381	25053	33737.7	8021	23073	8524	11947	9610	8841	22981	16080	15411.4	
	GUIDELINE														
IRON UNF.TOT. KG /DAY (FEUT)	ACTUAL	3966.6	4457.2	4441.2	3446.3	4302	4929	1568	1162	1503	2312	15675	2241	4166.93	
	GUIDELINE														
NH3-N TOTAL KG /DAY (NNHTUR)	ACTUAL	5968.8	4761.9	3833.9	5622.9	4557	3111	4091	2423	3123	2992	3533	3116	3927.78	
	GUIDELINE	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	
PH (PH)	ACTUAL	8.7	8.3	7.9	8.7	8.4	8	8.4	8	8	8.1	8.2	8.3	8.25	
	GUIDELINE														
PHENOLS UNF-REAC KG /DAY (PHNOL)	ACTUAL	151	114	114	145	182	105	136	33	34	23	51	60	95.6666	
	GUIDELINE	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	
RESIDUE FILTERED KG /DAY (RSF)	ACTUAL	44199.4	35428.8	40995.8	41355.9	33907	45446	22844	37499	36382	34004	37387	35845	37107.8	
	GUIDELINE														
RESIDUE PARTIC. KG /DAY (RSP)	ACTUAL	6422.1	7238	7212.2	9069.3	7656	6992	6137	6637	6178	8161	13377	8375	7787.88	
	GUIDELINE	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	
SOLVENT EXTRACT. KG /DAY (SOLEXT)	ACTUAL	355.5	1142.9	1138.8	1451.1	1451.1	2447	1364	1327	2746	3740	3087	1340	1799.19	
	REQUIREMENT	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	
SULPHIDE UNF.REAC KG /DAY (SSIDUR)	ACTUAL	124.7	64.8	38	105.2	84	35	34	33	34	34	34	33	54.4748	
	GUIDELINE	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

000004-00-0(6) THE ALGOMA STEEL CORPORATION LIMITED STEEL - 24" COLD MILL BASIN
CONTROL POINT: 0500 DATA FOR 1986

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	9501.14	9501.14	9501.14	9501.14	9501.14	9501	9501	5364	5364	5364	5364	5364	7777.3	
M3 /DAY (FTFLOW)	GUIDELINE														
IRON FIL.TOT.	ACTUAL	108	284.1	404.7	3.8	40	2	0.5	0.4	1	644	70	0.3	129.9	
KG /DAY (FEFT)	GUIDELINE	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	
IRON UNF.TOT.	ACTUAL	158.6	322.1	435.2	7.5	100	12	4	4	7	692	89	0.6	152.666	
KG /DAY (FEUT)	GUIDELINE														
PH	ACTUAL	6.4	5.5	5.5	7.6	7.3	7.5	8.1	8	7.9	7.3	7.5	8	7.21665	
(PH)	GUIDELINE														
RESIDUE FILTERED	ACTUAL	1491.7	2156.8	3848	788.6	599	703	523	408	359	3503	373	308	1255.08	
KG /DAY (RSF)	GUIDELINE														
RESIDUE PARTIC.	ACTUAL	152	95	48	38	76	19	29	75	27	54	27	5	53.75	
KG /DAY (RSP)	GUIDELINE	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	SC	
SOLVENT EXTRACT.	ACTUAL	57	47.5	38	28.5	10	10	29	16	11	11	11	22	24.25	
KG /DAY (SOLEXT)	REQUIREMENT	S/C	S/C	S/C	S/C	S/C	S/C	S/C	S/C	S/C	S/C	S/C	S/C		

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: The Algoma Steel Corp. Ltd. (Ore Div.) Wawa

INDUSTRIAL SECTOR: Metal Mining, Smelting, Refining

RECEIVING WATERBODY: DIRECT: Magpie R.
INDIRECT: 10 km to Lake Superior

DESCRIPTION OF ACTIVITY: Sulphur bearing iron ore is roasted to make iron sinter.

EFFLUENT QUALITY: Contains suspended solids and dissolved metal sulphates.

EFFLUENT TREATMENT: Tailings pond system (3 ponds) in series.

DISCHARGE TYPE: Continuous

COMMENTS:

No formal requirements but effluent discharge quality consistently meets provincial mine effluent quality objectives.

IMIS NUMBER: 0000040105 SIC CODE: 058 MOE REGION: Northeast DISTRICT: Sault Ste. Marie

03/06/87

000004-01-0(5) THE ALGOMA STEEL CORPORATION,LIMITED
CONTROL POINT: 0100 DATA FOR 1986
REPORT DATE: 26 AUG 87

CONCENTRATION PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
ALK TOTAL	ACTUAL	61.00	57.00	79.00	63.00	93.00	120.00	143.00	181.00	81.00		35.00	61.00	88.55	
MG/L AS CACO3	GUIDELINE														
COPPER UNF.TOT.	ACTUAL	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00				0.00	
MG/L AS CU	GUIDELINE	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				1.00	
IRON UNF.TOT.	ACTUAL	0.05	0.05	0.05	0.08	0.05	0.05	0.52	0.06	0.03	0.06	0.05	0.70	0.18	
MG/L AS FE	GUIDELINE	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
MANGANESE UNF.TOT.	ACTUAL	0.29	2.00	3.15	1.67	0.39	0.05	0.02	0.01	0.01	1.24	0.20	0.16	0.77	
MG/L AS MN	GUIDELINE														
NICKEL UNF.TOT.	ACTUAL	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.02			0.00	
MG/L AS NI	GUIDELINE	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	
LEAD UNF.TOT.	ACTUAL	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.05	0.00				0.01	
MG/L AS PB	GUIDELINE	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				1.00	
PH	ACTUAL	7.51	7.40	7.50	7.60	7.80	7.70	7.80	7.80	8.00	8.00	8.60	9.10	7.03	
(PH)	GUIDELINE														
RESIDUE FILTERED	ACTUAL	548.00	666.00	740.00	1125.00	1076.00	1105.00	1175.00	1253.00	803.00	1111.00	648.00	471.00	893.42	
MG/L (RSF)	GUIDELINE														
RESIDUE PARTIC.	ACTUAL	1.00	1.00	1.00	1.00	1.00	2.00	5.00	1.00	1.00	3.50	18.50	10.00	4.09	
MG/L (RSP)	GUIDELINE	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	1
SULPHATE UNF.REAC	ACTUAL	325.00	340.00	403.00	690.00	645.00	602.00	723.00	703.00	440.00	648.00	380.00	130.00	502.42	
MG/L AS SO4	GUIDELINE	750.00	750.00	750.00	750.00	750.00	750.00	750.00	750.00	750.00	750.00	750.00	750.00	750.00	
ZINC UNF.TOT.	ACTUAL	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00		0.04		0.01	
MG/L AS ZN	GUIDELINE	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	

NOTE: PH LIMIT 5.5-9.5, 0* INDICATES INTAKE EXCEEDED DISCHARGE, S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: The Canadian Salt Company Ltd. Windsor

INDUSTRIAL SECTOR: Industrial Minerals

RECEIVING WATERBODY: DIRECT: Detroit River
INDIRECT: Lake Erie

DESCRIPTION OF ACTIVITY: Salt is mined and prepared for use.

EFFLUENT QUALITY: Contains dissolved salt (chlorides).

EFFLUENT TREATMENT:

DISCHARGE TYPE: continuous

COMMENTS:
There was a minor exceedance of the suspended solids guideline in November.

IMIS NUMBER: 0001040005 SIC CODE: 079 793 MOE REGION: Southwest DISTRICT: Windsor

000104-00-0(5) THE CANADIAN SALT COMPANY LIMITED WINDSOR REPORT DATE: 28 JUL 87

S U M M A R Y FOR EMIS. TYPE: 16 FINAL DISCHARGE - NET DATA DISCHARGED INTO: 02/003/ LAKE ERIE

INCLUDES CONTROL POINTS: 0100 0200

DATA FOR 1986

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	22719	22989	19576	22638	21159	16637	21423	21951	20183	20627	21001	18230	20761	
M3 /DAY (FTFLOW)	GUIDELINE														
ALK TOTAL	ACTUAL	0	3	0	0	28	7	4	4	0	0	0	0	4	
KG /DAY (ALKT)	GUIDELINE														
CHLORIDE UNF.REAC	ACTUAL	7751	8325	7476	5662	6317	6533	14366	14530	6116	7942	9453	8042	8543	
KG /DAY (CLIDUR)	GUIDELINE														
RESIDUE FILTERED	ACTUAL	18041	15296	11901	9795	11071	12297	24387	26343	10112	14248	15720	14816	14919	
KG /DAY (RSF)	GUIDELINE														
RESIDUE PARTIC.	ACTUAL	86	37	113	63	196	209	283	172	270	130	329	124	168	
KG /DAY (RSP)	GUIDELINE	341	345	294	340	317	250	321	329	303	309	315	273	311	1
RESIDUE TOTAL	ACTUAL	13127	15333	12019	9858	12167	12506	27431	26514	10382	14377	16049	14940	15392	
KG /DAY (RST)	GUIDELINE														

NOTE: PH LIMIT 5.5-10.6, 0* INDICATES INTAKE EXCEEDED DISCHARGE, S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: & PLANT LOCATION: The Ontario Paper Company Ltd.
Allanburg
Thorold

INDUSTRIAL SECTOR: Pulp and Paper Mill

RECEIVING WATERBODY: DIRECT: Twelve Mile Creek
INDIRECT: 12.4 km to Lake Ontario

DESCRIPTION OF ACTIVITY: Newsprint is made from debarked logs by three pulping processes (sulphite, thermal-mechanical and chemi-mechanical) and from deinked newspaper pulp.

EFFLUENT QUALITY: Residual organics may foam slightly at each drop in Old Welland Canal.

EFFLUENT TREATMENT: Spent sulphite liquor is treated to produce saltcake, vanillin and alcohol. An oxygen high-rate system treats deinking effluent and condensates from sulphite pulping. A clarifier removes solids from high-solids wastewaters (note-cooling waters were separated from process wastewaters).

DISCHARGE TYPE: continuous into a buried part of the Old Welland Canal

COMMENTS:

Company is in compliance with effluent loadings specified in the previous Control Order. New Control Order appealed.

Two bioassays conducted in 1986 indicated that the combined final effluent was not acutely lethal to fish.

IMIS NUMBER: 0000930008 SIC CODE: 271 MOE REGION: West Central DISTRICT: Welland

10/06/87

000093-00-0(8) THE ONTARIO PAPER COMPANY LIMITED

CONTROL POINT: 0100 DATA FOR 1986

REPORT DATE: 25 JUN 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	99760	97730	94860	90660	96500	111300	109400	124400	130300	105700	99220	107200	105586	
M3 /DAY (FTFLOW)	GUIDELINE														
BOD 5 DAY	ACTUAL	11100	12700	9500	7100	8000	7300	8100	9200	6300	6200	4100	5100	7891.66	
KG /DAY (BOD5)	REQUIREMENT	18140	18140	18140	18140	18140	18140	18140	18140	18140	18140	18140	18140	18140	

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

CONTROL POINT: 0200 DATA FOR 1986

REPORT DATE: 25 JUN 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
RESIDUE FILTERED	ACTUAL	63800	66900	54800	43500	43700	32600	36800	48900	48900	36100	29200	42000	45600	
KG /DAY (RSF)	GUIDELINE														
RESIDUE PARTIC.	ACTUAL	3600	4300	4000	3600	3000	2300	3700	2700	4600	4400	3500	3600	3608	
KG /DAY (RSP)	REQUIREMENT	6800	6800	6800	6800	6800	6800	6800	6800	6800	6800	6800	6800	6800	

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Trent Valley Paperboard Mills
A Division of Paperboard Industries Corporation
Trenton

INDUSTRIAL SECTOR: Pulp and Paper Mill

RECEIVING WATERBODY: DIRECT: Trent River
INDIRECT: Lake Ontario (Bay of Quinte)

DESCRIPTION OF ACTIVITY: Wastepaper is repulped to form coated paperboards.

EFFLUENT QUALITY:

EFFLUENT TREATMENT: "Saveall" screens and two "Krofta" clarifiers remove solids. Rejects from burnish are removed from wastewaters and sent to an approved landfill site.

DISCHARGE TYPE: Intermittent

COMMENTS:

Not in compliance. Suspended solids effluent objective of 140 kg/day set out in Certificate of Approval presently under review. BOD requirement also being developed on basis of receiving water effluent impact. Guideline shown for BOD based on 50 mg/l at treatment process design flow.

A bioassay conducted in 1986 indicated that it would take, statistically, 57.7% effluent to kill 50% of the test fish by the end of the four days exposure. The company has been requested to determine the cause of the toxicity.

IMIS NUMBER: 0001750009 SIC CODE: 271 MOE REGION: Southeast DISTRICT: Kingston

28/07/87

000175-00-0(9) TRENT VALLEY PAPERBOARD MILLS
CONTROL POINT: 0100 DATA FOR 1986

REPORT DATE: 20 JUN 87

CONCENTRATION PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	1753	2317	2373	1580	2017	2346	2704	2909	3069	2773	2525	2564	2410	
M3 /DAY (FTFLOW)	GUIDELINE														
BOD 5 DAY	ACTUAL	1665.4	1828.1	1675.3	1504.2	2969.0	1630.5	2152.4	1867.6	2298.7	2775.8	2285.1	2492.2	2134.7	
KG/D (BOD5)	GUIDELINE	140.0	140.0	140.0	140.0	140.0	140.0	140.0	140.0	140.0	140.0	140.0	140.0	140.0	12
RESIDUE FILTERED	ACTUAL	2133.4	2588.1	2536.7	1932.3	1766.9	2226.4	3142.0	2455.2	3213.2	3030.9	2472.0	3081.9	2566.2	
KG/D (RSF)	GUIDELINE														
RESIDUE PARTIC.	ACTUAL	396.2	456.4	420.0	420.3	546.6	441.0	589.5	648.7	650.6	618.4	583.3	569.2	533.0	
KG/D (RSP)	REQUIREMENT	140.0	140.0	140.0	140.0	140.0	140.0	140.0	140.0	140.0	140.0	140.0	140.0	140.0	12

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE, S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Union Carbide Canada Ltd. Corunna

INDUSTRIAL SECTOR: Organic Chemicals, Synthetic Fibres

RECEIVING WATERBODY: DIRECT: St. Clair River
INDIRECT:

DESCRIPTION OF ACTIVITY: Feedstock from neighbouring petroleum refineries is converted into polyethylene resins.

EFFLUENT QUALITY: Contains organic compounds at trace levels

EFFLUENT TREATMENT:

DISCHARGE TYPE: batch discharge through an extended outfall

COMMENTS:

Four monthly and annual exceedance of suspended solids. This is an improvement over 1985 where there were 9 exceedances. for suspended solids. The company is currently implementing the recommendations of a private consultant to further address the suspended solids issue. Completion of this project is expected by the end of 1987.

IMIS NUMBER: 0000380105 SIC CODE: 373 MOE REGION: Southwest DISTRICT: Sarnia

24/07/87

000038-01-0(5) UNION CARBIDE CANADA LIMITED
CONTROL POINT: 0100 DATA FOR 1986

REPORT DATE: 24 JUL 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	2211.84	2220.48	2626.56	2773.44	2678.4	2332.8	2073.6	2332.8	1987.2	2246.4	1728	1382.4	2216.15	
M3 /DAY (FTFLOW)	GUIDELINE														
K'DAHL N TOTAL	ACTUAL	1.64	1.44	3.58	2.44	4.91	1.97	1.93	2.01	2.58	2.05	1.32	2.23	2.34	
KG /DAY (NNTKUT)	GUIDELINE														
PH	ACTUAL	7.4	7.3	7.3	7.4	7.58	7.4	7.7	7.5	7.43	7.4	7.4	7.5	7.44	
(PH)	GUIDELINE														
PHOSPHOR UNF.TOT.	ACTUAL	0.68	1.24	2.5	2.07	2.67	1.24	1.34	0.91	0.79	0.88	0.92	1.18	1.55	
KG /DAY (PPUT)	GUIDELINE	2.21184	2.22048	2.62656	2.77344	2.6784	2.3328	2.0736	2.3328	1.9872	2.2464	1.728	1.3824	2.22	
RESIDUE FILTERED	ACTUAL	535	517.8	597.6	593.5	534.98	411.65	439.26	434.31	373.56	394	410.85	412.91	471.28	
KG /DAY (RSF)	GUIDELINE														
RESIDUE PARTIC.	ACTUAL	89.7	15	33.4	27.5	101.95	20.98	23.61	18.45	35.37	42.96	21.51	18.81	37.44	
KG /DAY (RSP)	GUIDELINE	33.1776	33.3072	39.3984	41.6016	40.176	34.992	31.104	34.992	29.808	33.696	25.92	20.736	33.24	4
CARBON TOTAL	ACTUAL	16.8	5.6	1.46	0	25.36	22.25	7.76	14.01	14.7	16.47	10.4	13.8	12.38	
KG /DAY (TOC)	GUIDELINE														

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME: Washington Mills Ltd. INDUSTRIAL SECTOR: Industrial Minerals
& PLANT LOCATION: Niagara Falls

RECEIVING WATERBODY: DIRECT: Welland R.
INDIRECT: 11 km to Lake Ontario

DESCRIPTION OF ACTIVITY: Abrasive oxides are manufactured in electric arc furnaces.

EFFLUENT QUALITY: Contains dissolved organic compounds and organic processing compounds

EFFLUENT TREATMENT: Oil water separation.

DISCHARGE TYPE: Continuous

COMMENTS:

Suspended Solids not in compliance. Company installed filter system to bring solids loadings into compliance in March 1987. Wastewater is furnace cooling water only.

IMIS NUMBER: 0001950005 SIC CODE: 357 MOE REGION: West Central DISTRICT: Welland

10/06/87

000195-00-0(S) WASHINGTON MILLS LIMITED
CONTROL POINT: 0100 DATA FOR 1986

REPORT DATE: 25 JUN 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL			1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
M3 /DAV (FTFLOW)	GUIDELINE														
PH	ACTUAL			7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.1	7.19	
(PH)	GUIDELINE														
RESIDUE PARTIC.	ACTUAL	7.6	37.1	28.5	27.5	36.1	11.4	11.4	38.95	39.9	49.4	39.9	30.4	29.85	
KG /DAV (RSP)	GUIDELINE	-	-	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	28.5	23.75	8
SOLVENT EXTRACT.	ACTUAL	0	0	0	0	0	0	0			0	0	0	0	
KG /DAV (SOLEXT)	GUIDELINE	0	0	28.5	28.5	28.5	28.5	28.5			28.5	28.5	28.5	22.8	

NOTE: PH LIMIT 5.5-9.5, 0* INDICATES INTAKE EXCEEDED DISCHARGE, S/C -SEE COMMENT

WASTEWATER DISCHARGE SUMMARY
1986

COMPANY NAME & PLANT LOCATION: Wickes Manufacturing Co. Ltd. Bumper Division - Windsor Plant

INDUSTRIAL SECTOR: Metal, Plastic Fabricating and Finishing

RECEIVING WATERBODY: DIRECT: Little R.
INDIRECT: 3.3 km to Detroit River

DESCRIPTION OF ACTIVITY: Steel parts for the automobile industry are plated .

EFFLUENT QUALITY: Contains dissolved metals like nickel, zinc and chromium.

EFFLUENT TREATMENT: Chemical precipitation and sedimentation, reduction of water useage.

DISCHARGE TYPE: Continuous five days a week

COMMENTS:

Suspended Solids and Nickel were not in compliance caused by an inadequate settling capacity in the existing wastewater treatment plant. The company is designing a new wastewater treatment system which will likely discharge to municipal sewers.

IMIS NUMBER: 0001060003 SIC CODE: 304 MOE REGION: Southwest DISTRICT: Windsor

26/08/87

000106-00-0(3) WICKES MANUFACTURING COMPANY LTD. WINDSOR

CONTROL POINT: 0100 DATA FOR 1986

REPORT DATE: 28 JUL 87

FLOW/LOADING PARAMETERS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL AVERAGE	TOTAL EXCEEDANCES
FLOW	ACTUAL	607	594	621	797	974	852	1332	1355	1686	1309	807	752	974	
M3 /DAY (FTFLOW)	GUIDELINE														
CHROMIUM UNF.TOT.	ACTUAL	0.2	0.2	0.4	0.4	0.59	0.34	0.53	0.54	0.8	0.7	0.44	0.35	0.46	
KG /DAY (CRUT)	GUIDELINE	0.607	0.594	0.621	0.797	0.974	0.852	1.332	1.355	1.686	1.309	0.807	0.752	0.974	
CHROMIUM +6	ACTUAL	0.1	0.08	0.18	0.16	0.29	0.144	0.27	0.4	0.5	0.5	0.34	0.24	0.27	
KG /DAY (CR6UR)	GUIDELINE	0.607	0.594	0.621	0.797	0.974	0.852	1.332	1.355	1.686	1.309	0.807	0.752	0.974	
IRON UNF.TOT.	ACTUAL	0.2	0.2	0.3	0.24	0.26	0.31	0.36	0.27	0.24	0.12	0.24	0.42	0.26	
KG /DAY (FEUT)	REQUIREMENT	10.3	10.1	10.6	13.5	16.6	14.5	22.6	23.0	28.7	22.3	13.7	12.8	16.56	
NICKEL UNF.TOT.	ACTUAL	0.6	0.7	0.77	0.96	0.68	0.8	1.3	1.2	1.5	1.1	0.97	0.66	0.94	
KG /DAY (NIUT)	REQUIREMENT	0.607	0.594	0.621	0.797	0.974	0.852	1.332	1.355	1.686	1.309	0.807	0.752	0.974	4
RESIDUE FILTERED	ACTUAL	1863	1577	1771	2511	3874	3162	4091	3602	4701	4568	2587	2256	3056	
KG /DAY (RSF)	REQUIREMENT														
RESIDUE PARTIC.	ACTUAL	21	16	15.6	30.16	27.2	21.7	29	19	32.9	42.4	14.97	16.5	23.87	
KG /DAY (RSP)	REQUIREMENT	9.1	8.9	9.3	12.0	14.6	12.8	20.0	20.3	25.3	19.6	12.1	11.3	14.61	11
ZINC UNF.TOT.	ACTUAL	0.7	0.8	0.7	1.2	1.08	0.9	1.74	1.2	1.2	1.4	1.29	1.13	1.11	
KG /DAY (ZNUT)	GUIDELINE	3.04	2.97	3.11	3.99	4.87	4.26	6.66	6.78	8.43	6.55	4.04	3.76	4.87	

NOTE: PH LIMIT 5.5-9.5. 0* INDICATES INTAKE EXCEEDED DISCHARGE. S/C -SEE COMMENT

Appendix B

ALPHABETICAL LIST OF SOURCES

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ABITIBI-PRICE INC. (FT WILLIAM)	THUNDER BAY	Lake Superior	A-2
ABITIBI-PRICE INC. (FINE PAPERS)	THUNDER BAY	Lake Superior	A-3
AGNICO EAGLE MINES LTD. (PENN MILL)	COBALT	Ottawa River	A-4
AGNICO EAGLE MINES LTD. (REFINERY)	COBALT	Ottawa River	A-5
AMERICAN STANDARD - Div. of WABCO	CAMBRIDGE	Lake Erie	A-6
ATLAS STEEL COMPANY LTD.	WELLAND	Lake Ontario	A-7
BAKELITE THERMOSETS LTD.	BELLEVILLE	Lake Ontario	A-8
BEAVER WOOD FIBRE COMPANY LTD.	THOROLD	Lake Ontario	A-9
B.F.GOODRICH	NIAGARA FALLS	Lake Ontario	A-10
BLACKSTONE INDUSTRIAL PROD.'S LTD.	STRATFORD	Lake Erie	A-11
BOISE CASCADE CANADA LTD.	FORT FRANCES	Hudson Bay	A-12
BOISE CASCADE CANADA LTD.	KENORA	Hudson Bay	A-13
BORG-WARNER CHEMICALS	COBOURG	Lake Ontario	A-14
CAMPBELL RED LAKE MINE LTD.	BALMERTON	Hudson Bay	A-15
CAMPBELL SOUP COMPANY LTD.	ST. MARYS	Lake Erie	A-16
CANADIAN CANNERS LTD.	ST. DAVIDS	Lake Ontario	A-17
CANADIAN INDUSTRIES LTD.	CORNWALL	St. Lawrence R.	A-18
CANADIAN INDUSTRIES LTD.	COURTRIGHT	Lake Erie	A-19
CANADIAN OXY-DUREZ	FORT ERIE	Lake Ontario	A-20
CASCO INC.	CARDINAL	St. Lawrence R.	A-21
CELANESE CANADA INC.	TWP. OF ERNESTOWN	Lake Ontario	A-22
CHAMPLAIN INDUSTRIES LTD.	TARA	Lake Huron	A-23
CHESAPEAKE AND OHIO RAILWAY CO.	ST. THOMAS	Lake Erie	A-24
CORBY DISTILLERIES LTD.	CORBYVILLE	Lake Ontario	A-25
COURTAULDS LTD. & BCL LTD.	CORNWALL	St. Lawrence R.	A-26
CYANAMID CANADA INC.	NIAGARA FALLS	Lake Ontario	A-27
CYANAMID CANADA INC. (WELLAND PLANT)	NIAGARA FALLS	Lake Ontario	A-28

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ALPHABETICAL LIST OF SOURCES

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DENISON MINES LTD. (Williams Lake)	ELLIOT LAKE	Lake Huron	A-31
DETOUR LAKE MINE	TIMMINS	Hudson Bay	A-32
DICKENSON-SULLIVAN JOINT VENTURE	BALMERTON	Hudson Bay	A-33
DOFASCO INC.	HAMILTON	Lake Ontario	A-34
DOME MINES LTD.	SOUTH PORCUPINE	Hudson Bay	A-35
DOMTAR CHEMICALS GROUP	GODERICH	Lake Huron	A-36
DOMTAR CHEMICAL GROUP	ORILLIA	Lake Huron	A-37
DOMTAR CONSTRUCTION MATERIALS LTD.	THOROLD	Lake Ontario	A-38
DOMTAR FINE PAPERS	CORNWALL	St. Lawrence R.	A-39
DOMTAR FINE PAPERS	ST.CATHARINES	Lake Ontario	A-40
DOMTAR PACKAGING LTD.	RED ROCK	Lake Superior	A-41
DOMTAR PACKAGING	TRENTON	Lake Ontario	A-42
DOMTAR WOOD PRESERVING	TRENTON	Lake Ontario	A-43
DOW CHEMICAL OF CANADA LTD.	SARNIA	Lake Erie	A-44
DUPONT CANADA INC.	CORUNNA	Lake Erie	A-45
DUPONT CANADA LTD.	KINGSTON TOWNSHIP	Lake Ontario	A-46
DUPONT CANADA INC.	MAITLAND	St. Lawrence R.	A-47
DUPONT CANADA INC.	MAITLAND	St. Lawrence R.	A-48
DUPONT CANADA INC.	NORTH BAY	Lake Huron	A-49
E. B. EDDY FOREST PRODUCTS LTD.	ESPANOLA	Lake Huron	A-50
E. B. EDDY FOREST PRODUCTS LTD.	OTTAWA	Ottawa River	A-51
ELDORADO RESOURCES LTD.	BLIND RIVER	Lake Huron	A-52
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ELDORADO NUCLEAR LTD.	WELCOME	Lake Ontario	A-55
ESSO CHEMICALS	SARNIA	Lake Erie	A-56
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ALPHABETICAL LIST OF SOURCES

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FORD MOTOR COMPANY	WINDSOR	Lake Erie	A-68
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GENERAL CHEMICAL CANADA LTD.	AMHERSTBURG	Lake Erie	A-71
GENERAL MOTORS OF CANADA LTD.	ST. CATHARINES	Lake Ontario	A-72
GNB BATTERIES CANADA INC.	PORT ERIE	Lake Ontario	A-73
GREAT LAKES FOREST PRODUCTS	DRYDEN	Hudson Bay	A-74
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INCO LTD. (Copper Cliff Creek W.W.T.)	COPPER CLIFF	Lake Huron	A-78
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INCO LTD. (Frood Stobie)	COPPER CLIFF	Lake Huron	A-80
INCO LTD. (Garson Mine)	COPPER CLIFF	Lake Huron	A-81
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INCO METALS COMPANY	SHEBANDOWAN	Lake Superior	A-85

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ALPHABETICAL LIST OF SOURCES

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J.M.SCHNEIDER INC.	AYR	Lake Erie	A-88
KERR ADDISON MINES LTD.	VIRGINIATOWN	Ottawa River	A-89
KIDD CREEK MINES LTD. (Met. Site)	TIMMINS	Hudson Bay	A-90
KIDD CREEK MINES LTD. (Mine Site)	TIMMINS	Hudson Bay	A-91
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KIMBERLY CLARK OF CANADA LTD.	ST. CATHARINES	Lake Ontario	A-93
KIMBERLY-CLARK OF CANADA LTD.	TERRACE BAY	Lake Superior	A-94
KRAFT LTD.	INGLESIDE	St. Lawrence R.	A-95
LAC MINERALS (MACASSA DIVISION)	KIRKLAND LAKE	Ottawa River	A-96
MACMILLAN BLOEDEL LTD.	STURGEON FALLS	Lake Huron	A-97
MALETTE PULP AND PAPER LTD.	SMOOTH ROCKFALLS	Hudson Bay	A-98
MATTABI MINES LTD.	DISTRICT OF KENORA	Hudson Bay	A-99
MITSUBISHI ELECTRONICS INC.	MIDLAND	Lake Huron	A-100
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NITROCHEM	MAITLAND	St. Lawrence R.	A-102
NORANDA INC. LYON LAKE DIV.	DISTRICT OF THUNDER BAY	Lake Superior	A-103
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NORANDA MINES LIMITED GECO DIV.	MANITOUWADGE	Lake Superior	A-105
NORTHERN WOOD PRESERVERS	THUNDER BAY	Lake Superior	A-106
NORTON COMPANY	NIAGARA FALLS	Lake Ontario	A-107
OGILVIE MILLS LTD.	THUNDER BAY	Lake Superior	A-108
OMSTEAD FOODS LTD.	WHEATLEY	Lake Erie	A-109
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ONTARIO HYDRO N.P.G.D .	PICKERING	Lake Ontario	A-111
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ONTARIO HYDRO T.G.S.	NANTICOKE	Lake Erie	A-113
ONTARIO HYDRO (DOMESTIC STP)	TIVERTON	Lake Huron	A-114
ONTARIO HYDRO (BRUCE GEN. STN.)	TIVERTON	Lake Huron	A-115
ONTARIO HYDRO (HEAVY WATER PLANT)	TIVERTON	Lake Huron	A-116

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PAMOUR PORCUPINE MINES - Schumacher Mine	TIMMINS	Hudson Bay	A-120
PETRO-CANADA PRODUCTS CO. (Formerly GULF CANADA)	MISSISSAUGA	Lake Ontario	A-121
PETRO-CANADA PRODUCTS INC.	OAKVILLE	Lake Ontario	A-122
PETROSAR LTD.	SARNIA	Lake Erie	A-123
POLYSAR LTD.	SARNIA	Lake Erie	A-124
PROVINCIAL MILLS LTD. (ABITIBI-PRICE INC.)	THUNDER BAY	Lake Superior	A-125
REICHHOLD LTD.	THUNDER BAY	Lake Superior	A-126
RIO ALGOM LTD. (Panel Mill)	ELLIOT LAKE	Lake Huron	A-127
RIO ALGOM LTD. (Quirke Mill)	ELLIOT LAKE	Lake Huron	A-128
RIO ALGOM LTD. (Stanleigh Mill)	ELLIOT LAKE	Lake Huron	A-129
ROTHSAY LTD.	ROTHSAY	Lake Erie	A-130
SHELL CANADA LTD.	CORUNNA	Lake Erie	A-131
SHERMAN MINE	TEMAGAMI	Lake Huron	A-132
SOHIO	NIAGARA FALLS	Lake Ontario	A-133
SPRUCE FALLS POWER & PAPER CO. LTD.	KAPUSKASING	Hudson Bay	A-134
STANLEY HARDWARE	NEW HAMBURG	Lake Erie	A-135
ST. MARYS PAPER INC.	SAULT STE MARIE	Lake Huron	A-136
STELCO INC.	HAMILTON	Lake Ontario	A-137
STELCO INC., LAKE ERIE WORKS	NANTICOKE	Lake Erie	A-138
STELCO PAGE HERSEY	WELLAND	Lake Ontario	A-139
STELCO WELLAND TUBES	WELLAND	Lake Ontario	A-140
STRATHCONA PAPER COMPANY	TWP OF CAMDEN EAST	Lake Ontario	A-141
SUNCOR SUNOCO GROUP	SARNIA	Lake Erie	A-142
TECK-CORUNA INC.	MARATHON	Lake Superior	A-143
TEND-R-FRESH POULTRY LTD.	PETERSBURG	Lake Erie	A-144

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TEXACO CANADA INC., NANTICOKE REFINERY	JARVIS	Lake Erie	A-146
THE ALGOMA STEEL CORPORATION LTD.	SAULT STE. MARIE	Lake SUPERIOR	A-147
THE ALGOMA STEEL CORPORATION LTD. (ORE DIVISION)	WAWA	Lake Huron	A-148
THE CANADIAN SALT COMPANY LTD.	WINDSOR	Lake Erie	A-149
THE ONTARIO PAPER COMPANY LTD.	THOROLD	Lake Ontario	A-150
TRENT VALLEY PAPERBOARD MILLS	GLEN MILLER	Lake Ontario	A-151
UNION CARBIDE CANADA LTD.	SARNIA	Lake Erie	A-152
WASHINGTON MILLS LTD.	NIAGARA FALLS	Lake Ontario	A-153
WICKES MANUFACTURING CO. LTD.	WINDSOR	Lake Erie	A-154

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LIST OF SOURCES BY MAJOR WATERSHED BASIN

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BOISE CASCADE CANADA LTD.	KENORA	A-13
DETOUR LAKE MINE	TIMMINS	A-32
DICKENSON-SULLIVAN JOINT VENTURE	BALMERTON	A-33
DOME MINES	SOUTH PORCUPINE	A-36
GREAT LAKES FOREST PRODUCTS	DRYDEN	A-75
KIDD CREEK MINES (Met Site)	TIMMINS	A-91
KIDD CREEK MINES (Mine Site)	TIMMINS	A-92
MALETTE PULP AND PAPER LTD.	SMOOTH ROCK FALLS	A-98
PAMOUR PORCUPINE MINES - Pamour Mine	TIMMINS	A-119
PAMOUR PORCUPINE MINES - Schumacher	TIMMINS	A-120
SPRUCE FALLS POWER AND PAPER CO. LTD.	KAPUSKASING	A-134
TECK-CORUNA INC.	MARATHON	A-143
LAKE SUPERIOR		
ABITIBI-PRICE INC. (FT. WILLIAM)	THUNDER BAY	A-2
PROVINCIAL MILL (ABITIBI-PRICE INC.)	THUNDER BAY	A-123
ABITIBI-PRICE INC. (FINE PAPERS)	THUNDER BAY	A-3
DOMTAR PACKAGING LTD.	RED ROCK	A-41
GREAT LAKES FOREST PRODUCTS	THUNDER BAY	A-76
INCO METALS COMPANY LTD.	SHEBANDOWAN	A-85
JAMES RIVER MARATHON LTD.	MARATHON	A-87
KIMBERLY-CLARK OF CANADA LTD.	TERRACE BAY	A-94
NORANDA INC. LYON LAKE DIV.	DISTRICT OF THUNDER BAY	A-103
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NORTHERN WOOD PRESERVERS	THUNDER BAY	A-106
OGILVIE MILLS LTD.	THUNDER BAY	A-108
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THE ALGOMA STEEL CORPORATION LTD. (ORE DIVISION)	WAWA	A-147
LAKE HURON ... (includes St. Marys River)		
CHAMPLAIN INDUSTRIES LTD.	TARA	A-23
DENISON MINES LTD.	ELLIOT LAKE	A-29
DENISON MINES LTD. (Stanrock)	ELLIOT LAKE	A-30
DENISON MINES LTD. (Williams Lake)	ELLIOT LAKE	A-31
DOMTAR CHEMICALS GROUP	ORILLIA	A-37
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DUPONT CANADA LTD. (NIPISSING WORKS)	NORTH BAY	A-49
E.B.EDDY FOREST PRODUCTS LTD.	ESPANOLA	A-50
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FALCONBRIDGE LTD.	FALCONBRIDGE	A-60
FALCONBRIDGE LTD., MOOSE L. WWTS	ONAPING FALLS	A-61
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GAY LEE FOODS LTD.	TEESWATER	A-70
INCO LTD. (Copper Cliff Nickel Ref.)	COPPER CLIFF	A-77
INCO LTD. (Copper Cliff Creek W.W.T.)	COPPER CLIFF	A-78
INCO LTD. (Crean Hill Mine)	COPPER CLIFF	A-79
INCO LTD. (Frood Stobie)	COPPER CLIFF	A-80
INCO LTD. (Garson Mine)	COPPER CLIFF	A-81
INCO LTD. (Levack Tailings Area)	COPPER CLIFF	A-82
INCO LTD. (Nolin Creek W.W.T.)	COPPER CLIFF	A-83
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ONTARIO HYDRO (Domestic STP)	TIVERTON	A-114
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ONTARIO HYDRO (BRUCE GEN. STN.)	TIVERTON	A-113
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THE ALGOMA STEEL CORPORATION LTD.	SAULT STE. MARIE	A-148
LAKE ERIE ... (includes St. Clair River, Lake St. Clair, Detroit River)		
AMERICAN STANDARD	CAMBRIDGE	A-6
BLACKSTONE INDUSTRIAL PRODUCTS LTD.	STRATFORD	A-11
CAMPBELL RED LAKE MINE LTD.	BALMERTON	A-15
CAMBELL SOUP COMPANY LTD.	ST. MARYS	A-16
CANADIAN INDUSTRIES LTD.	COURTRIGHT	A-19
CHESAPEAKE AND OHIO RAILWAY CO.	ST. THOMAS	A-24
DOW CHEMICAL OF CANADA LTD.	SARNIA	A-44
DUPONT CANADA INC.	CORUNNA	A-45
ESSO CHEMICALS	SARNIA	A-56
ESSO PETROLEUM CANADA	SARNIA	A-57
ETHYL CANADA INC.	CORUNNA	A-58
FIBERGLAS CANADA LTD.	SARNIA	A-63
FORD MOTOR COMPANY	ST. THOMAS	A-67
FORD MOTOR COMPANY	WINDSOR	A-68
GENERAL CHEMICAL CANADA LTD.	AMHERSTBURG	A-71
H.J.HEINZ COMPANY OF CANADA LTD.	LEAMINGTON	A-76
INCO METALS COMPANYPORT	COLBORNE	A-84
INT.'L MINERALS AND CHEMICAL CORP.	DUNNVILLE	A-86
J. M. SCHNEIDER INC.	AYR	A-88
OMSTEAD FOODS LTD.	WHEATLEY	A-109
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SUNCOR SUNOCO GROUP	SARNIA	A-142
TEND-R-FRESH POULTRY LTD.	PETERSBURG	A-144
TEXACO CANADA INC., NANTICOKE REFINERY	JARVIS	A-146
THE CANADIAN SALT COMPANY LTD.	WINDSOR	A-147
UNION CARBIDE CANADA LTD.	CORUNNA	A-152
WICKES MANUFACTURING CO. LTD.	WINDSOR	A-154
LAKE ONTARIO ... (includes Niagara River)		
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BAKELITE THERMOSETS LTD.	BELLEVILLE	A-8
BEAVER WOOD FIBRE COMPANY LTD.	THOROLD	A-9
B.F.GOODRICH	NIAGARA FALLS	A-10
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DOFASCO INC.	HAMILTON	A-34
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DOMTAR FINE PAPERS	ST. CATHARINES	A-40
DOMTAR PACKAGING	TRENTON	A-42
DOMTAR WOOD PRESERVING	TRENTON	A-43
DUPONT CANADA LTD.	KINGSTON TOWNSHIP	A-46
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ELDORADO NUCLEAR LTD.	PORT HOPE	A-54
ELDORADO NUCLEAR LTD.	WELCOME	A-55

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FLEET MANUFACTURING COMPANY LTD.	FORT ERIE	A-64
FORD MOTOR COMPANY	NIAGARA FALLS	A-65
FORD MOTOR COMPANY	OAKVILLE	A-66
FRASER INCORPORATED	THOROLD	A-69
GENERAL MOTORS OF CANADA LTD.	ST CATHARINES	A-72
GNB BATTERIES CANADA INC.	PORT ERIE	A-73
KIMBERLY CLARK OF CANADA LTD.	ST. CATHARINES	A-93
NORTON COMPANY	NIAGARA FALLS	A-107
ONTARIO HYDRO T.G.S. LAKEVIEW	TORONTO	A-118
ONTARIO HYDRO N.P.G.D.	PICKERING	A-111
PETRO-CANADA PRODUCTS INC.	OAKVILLE	A-122
PETRO CANADA PRODUCTS CO. (FORMERLY GULF CANADA)	MISSISSAUGA	A-123
SOHIO	NIAGARA FALLS	A-133
STELCO INC.	HAMILTON	A-137
STELCO PAGE HERSEY	WELLAND	A-139
STELCO WELLAND TUBES	WELLAND	A-140
STRATHCONA PAPER COMPANY	TWP. OF CAMDEN EAST	A-141
TEXACO CANADA INC.	MISSISSAUGA	A-145
THE ONTARIO PAPER COMPANY LTD.	THOROLD	A-150
TRENT VALLEY PAPERBOARD MILLS	TRENTON	A-151
WASHINGTON MILLS LTD.	NIAGARA FALLS	A-153
ST. LAWRENCE RIVER		
CASCO INC.	CARDINAL	A-21
COURTAULDS Ltd. and BCL Ltd.	CORNWALL	A-26
CANADIAN INDUSTRIES LTD.	CORNWALL	A-18
DOMTAR FINE PAPERS	CORNWALL	A-39
DUPONT CANADA INC.	KINGSTON	A-46
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NITROCHEM	MAITLAND	A-102
OTTAWA RIVER		
AGNICO EAGLE RIVER MINES LTD. (Penn Mill)	COBALT	A-4
AGNICO EAGLE MINES LTD. (Refinery)	COBALT	A-5
E.B. EDDY FOREST PRODUCTS LTD.	OTTAWA	A-51
KERR ADISON MINES LTD.	VIRGINIATOWN	A-89
LAC MINERALS (MACASSA DIVISION)	KIRKLAND LAKE	A-96
NESTLE ENTERPRISES LTD.	CHESTERVILLE	A-101

APPENDIX D
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0100 Petroleum Refining

Esso Petroleum Canada, Sarnia
Petro-Canada Products Ltd. (formerly Gulf Canada Ltd.), Mississauga
Petro Canada Products Ltd., Oakville
Petrosar Ltd., Sarnia
Suncor Sunoco Group, Sarnia
Shell Canada Ltd., Corunna
Texaco Canada Ltd., Port Credit
Texaco Canada Ltd., (Nanticoke Refinery), Jarvis

0200 Organic Chemicals and Synthetics

B.F. Goodrich, Niagara Falls
Bakelite Thermosets Ltd., Belleville
BCL (formerly TCF), Cornwall
Borg-Warner Chemicals Ltd., Cobourg
Canadian Oxy-Durez, Fort Erie
Canadian Industries Ltd., Cornwall
Celanese Canada Ltd., Ernestown Twp.
Courtaulds Ltd., Cornwall
Cyanamid Canada Ltd. (Welland Plant), Niagara Falls
Domtar Chemicals Limited (CDC Division), Orillia
Domtar Wood Preserving Ltd., Trenton
Dow Chemical Canada Ltd., Sarnia
Dupont Canada Inc., Corunna
Dupont Canada Inc., Kingston Twp.
Dupont Canada Inc. (Tetra Ethyl Lead), Maitland
Dupont Canada Inc. (Nylon intermediates), Maitland
Dupont Canada Inc. (Nipissing Works), North Bay
Esso Chemicals Canada Ltd., Corunna
Ethyl Canada Inc., Corunna
Polysar Ltd., Sarnia
Reichhold Chemicals Ltd., Thunder Bay
Union Carbide Canada Ltd., Corunna

0300 Pulp and Paper

Abitibi-Price Inc., Iroquois Falls
Abitibi-Price Inc. (Ft. William Div.), Thunder Bay
Abitibi-Price Inc. (Provincial Papers Div.), Thunder Bay
Abitibi-Price, Inc. (Thunder Bay Div.), Thunder Bay
Beaver Wood Fibre Company, Thorold
Boise Cascade Ltd. (Fort Frances), Fort Frances
Boise Cascade Ltd., (Kenora), Kenora
Domtar Construction Materials Ltd., Thorold
Domtar Fine Papers Ltd., Cornwall
Domtar Fine Papers Ltd., St. Catharines
Domtar Packaging Ltd., Trenton
Domtar Packaging Ltd., Red Rock
E. B. Eddy Forest Products Ltd., Espanola
E. B. Eddy Forest Products Ltd., Ottawa
Fraser Inc., Thorold
Great Lakes Forest Products Ltd., Thunder Bay
Great Lakes Forest Products Ltd., Dryden
James River Marathon Ltd., Marathon
Kimberly-Clark of Canada Ltd., St. Catharines
Kimberly-Clark of Canada Ltd., Huntsville
Kimberly-Clark of Canada Ltd., Terrace Bay
MacMillan Bloedel Ltd., Sturgeon Falls Rock Falls
Malette Kraft Pulp and Paper Inc., Smooth
Spruce Falls Power and Paper Co. Ltd., Kapuskasing
St. Mary's Paper Inc., Sault Ste. Marie
Strathcona Paper Company, Camden East Twp.
The Ontario Paper Company Inc., Thorold
Trent Valley Paperboard Mills, Trenton

0400 Metal Mining and Refining

Agnico Eagle Mines Ltd. (Silver Division), Cobalt
Agnico Eagle Mines Ltd. (Refinery), Cobalt
Campbell Red Lake Mines Ltd., Township Golden

0400 Metal Mining and Refining ...continued

Denison Mines Ltd. (0001680008), Elliot Lake
Denison Mines Ltd. (0001680107), Elliot Lake
Denison Mines Ltd. (0001680206), Elliot Lake
Detour Lake Mines Ltd., Timmins
Dicken-Sullivan Joint Venture, (Arthur W. White Mine), Township Golden
Dome Mines Limited, South Porcupine
Eldorado Nuclear Ltd., Port Hope
Eldorado Nuclear Ltd., Port Granby
Eldorado Nuclear Ltd. Welcome
Eldorado Resources Ltd., Blind River
Falconbridge Ltd., Falconbridge
Falconbridge Ltd. (Moose Lake), Falconbridge
Falconbridge Ltd. (Onaping Mine), Onaping Falls
Inco Ltd. (Copper Cliff Creek Nickel Ref.), Sudbury
Inco Ltd. (Copper Cliff Creek Wastewater Tr.), Sudbury
Inco Ltd. (Crean Hill), Sudbury
Inco Ltd. (Frood Stobie Emerg. Tailings Area), Sudbury
Inco Ltd. (Garson Mine), Sudbury
Inco Ltd. (Levack Tailings Area), Sudbury
Inco Ltd. (Nolin Creek), Sudbury
Inco Metals Ltd., Shebandowan
Inco Metals Ltd., Port Colborne
Kerr Addison Mines Limited, Virginiatown
Kidd Creek Mines Ltd. (0000990002), Timmins
Kidd Creek Mines Ltd. (0000990101), Timmins
Lac Minerals (Macassa Div.), Kirkland Lake
Mattabi Mines Ltd., District of Kenora
Noranda Hemlo Inc., Marathon
Noranda Inc. Lyon Lake Division, District of Thunder Bay
Noranda Mines Ltd. (GECO Division), Manitouwadge
Pamour Porcupine Mines (Pamour Site), Timmins
Pamour Porcupine Mines (Schumacher Division), Timmins
Rio Algom Ltd. (Panel Mill), Elliot Lake

0400 Metal Mining and Refining ...continued
Rio Algom Ltd. (Quirke Mill), Elliot Lake
Rio Algom Ltd. (Stanleigh Mill), Elliot Lake
Sherman Mine, Temagami
Teck-Corona Inc., Marathon
The Algoma Steel Corp. Ltd. (Ore Div.), Wawa

0500 Iron and Steel
Atlas Steel Company Ltd., Welland
Dofasco Inc., Hamilton
Stelco Inc., Hamilton
Stelco Inc. (Lake Erie Works), Nanticoke
Stelco Page Hersey Works, Welland
Stelco Welland Tube Works, Welland
The Algoma Steel Corporation Ltd., Sault Ste. Marie

0600 Electric Power Generation
Ontario Hydro (Domestic Treatment), Tiverton
Ontario Hydro (Heavy Water Plant), Tiverton
Ontario Hydro (Thermal Data Stations A and B), Tiverton
Ontario Hydro, Pickering
Ontario Hydro (TGS), Nanticoke
Ontario Hydro (Thermal Data), Nanticoke
Ontario Hydro (TGS, Lakeview), Toronto
Ontario Hydro (TGS, Lambton), Courtright
Ontario Hydro (TGS, Thunder Bay), Thunder Bay

0700 Inorganic Chemicals
Canadian Industries Ltd., Courtright
Cyanamid Canada Ltd., Niagara Falls
Exolon, Thorold
Fiberglas Canada Ltd., Sarnia
Ford Motor Company of Canada Ltd., Niagara Falls
General Chemical Canada Inc., Amherstburg

0700 Inorganic Chemicals...continued

Nitrochem Inc., Maitland
Norton Company, Niagara Falls
Sohio, Niagara Falls
Washington Mills Limited, Niagara Falls

0800 Metal Casting

Ford Motor Company of Canada Ltd., Windsor
General Motors of Canada Ltd., St. Catharines

0900 Industrial Minerals

Domtar Chemicals Ltd., Goderich
Fiberglas Canada, Sarnia
International Minerals and Chemicals, Dunnville
The Canadian Salt Company Ltd., Windsor
Exolon, Thorold

Metal Plating and Plastic Fabricators

American Standard Division of Wabco Standard, Cambridge
Blackstone Industrial Products, Stratford
Fleet Manufacturing Company Ltd., Fort Erie
GNB Batteries Canada Ltd., Fort Erie
Mitsubishi Electronics Ltd., Midland
Stanley Hardware, Div. of Stanley Canada Inc., New Hamburg
Wickes Manufacturing Co. Ltd., Windsor

Food Processors

Campbell Soup Company Ltd., St. Marys
Canadian Canners Ltd., St. David
CASCO. Ltd., Cardinal
Champlain Industries Ltd., Tara
Corby Distilleries Limited, Corbyville
Gay Lee Foods Cooperative Ltd., Teeswater
H.J. Heinz Company of Canada Ltd., Leamington
J.M. Schneider Inc., Ayr

Food Processors...continued

Kraft Foods Ltd., Ingleside
Nestle, Chesterville
Ogilvie Mills, Thunder Bay
Omstead Foods Ltd., Wheatley
Rothsay Ltd., Rothsay
Tend-R-Fresh Ltd. (Div. of Maple Leaf Mills), Petersburg

Miscellaneous

Chesapeake and Ohio Railway Co. Ltd., St. Thomas
Northern Wood Preserving Ltd., Thunder Bay
Ford Motor Company of Canada Ltd., Oakville
Ford Motor Company of Canada Ltd., St. Thomas

APPENDIX E

POLLUTANTS AND THEIR SIGNIFICANCE

In the Great Lakes context, overall loadings are the important measure of potential impact. The pollutants monitored and controlled by the Ministry of the Environment fall into one of four major groups defined by the International Joint Commission: Physical (settleable and suspended solids, temperature); chemical (persistent toxics, non-persistent toxics and others); microbiological; and radiological. The Ontario Ministry of the Environment document, Rationale For The Establishment of Ontario's Water Quality Objectives, September, 1979, provides additional information on the significance of these pollutants.

E.1 PHYSICAL

Under quiescent conditions suspended solids settle to the bottom where they may destroy fish spawning grounds and smother benthic organisms -- the basic food for many fish. Suspended solids may also plug fish gills. Nonsettleable solids in water increase turbidity, which reduces light penetration and thus restricts phytoplankton production. Thermal discharges from electricity generating stations can, if too hot, act as a thermal barrier that prevents cold water fish from entering the receiving waters.

E.2 CHEMICAL

1. Persistent Toxics

Toxic substances are defined (G.L.W.Q.A. Article 1 (1)) as substances that "can cause death, disease, behavioural abnormalities, cancer, genetic mutations, physiological or reproductive malfunctions or physical deformities in an organism or its offspring, or which can become poisonous after concentration in the food chain or in combination with other substances. Persistent toxics are defined (G.L.W.Q.A. Annex 12 (1)) as "a toxic substance with a half life in water greater than eight weeks". Half life means the time required for the concentration of the substance to diminish to one-half its original value in the water body.

Phthalic acid esters, including dibutyl phthalate, diphthalate and other phthalates, are found in the effluent of certain organic chemical manufacturing plants and are toxic to aquatic life. Polychlorinated Biphenyls (PCBS), are persistent in the environment and tend to accumulate in fish and sediments. PCB concentration limits in fish tissue protect birds and animals that eat the fish. The concentration of metals, including arsenic, cadmium, chromium, copper, iron, lead, mercury, nickel and selenium, is controlled to protect aquatic life or drinking water. Fluoride levels in surface waters are also limited (to a concentration of 1.2 milligrams per litre) to protect drinking water.

2. Non-Persistent Toxics

Non-persistent toxics have a half life in water of less than eight weeks and include various types of oils and waxes as well as ammonia-nitrogen. Oil and petrochemicals cause a visible sheen and impart an odour in receiving waters. In addition, they taint edible aquatic life and often cause deposits on nearby shores. Hydrocarbons are discharged by petroleum refineries and primary steel plants; animal fats, greases and vegetable oils from food processors; and soaps, greases, vegetable oils and waxes from soap manufacturers.

Ammonia-nitrogen is found in the effluent of primary steel producers, ore concentrating mills, fertilizer plants, petroleum refiners, synthetic organic factories and food processors. Depending on water temperature and pH, ammonia-nitrogen dissociates in varying amounts, forming un-ionized ammonia which is toxic to aquatic life. Hydrogen sulphide at undissociated concentrations above 2.0 micrograms per litre adversely affects aquatic life and also imparts a disagreeable odour to water.

3. Other Substances

The concentration of dissolved oxygen in water is lowered by the oxygen-demanding degradation of biodegradable materials. If too much oxygen is consumed by the biodegradable effluent in the receiving waters (i.e. if the Biochemical Oxygen Demand or BOD is too great), aquatic organisms can be adversely affected.

Often Chemical Oxygen Demand or Total Organic Carbon are used in place of the BOD test.

Although phosphorus is essential to plant growth and microorganism activity, too much causes excess algae, weed and slime growth. Phenolics, a group of organic substances, can adversely affect the taste of water and fish. At certain concentrations, phenolics in steel mill effluent are toxic to aquatic life forms. Phenolic compounds occur naturally in wood, coal and crude oil.

E.3 MICROBIOLOGICAL

Water used for body contact recreation activities should be substantially free from bacteria, fungi, or viruses that may produce enteric disorders or eye, ear, nose, throat and skin infections or other diseases and infections. Where any industrial effluent contains simple sugars, these compounds serve as food for bacterial growth. For each situation, the source has been required to segregate and treat separately its sanitary wastes.

E.4 RADIOLOGICAL

Radioactive pollutants, most commonly found in the nuclear fuel industry, are toxic in certain concentrations. The IJC agreement sets a limit of TED 50 (total equivalent dose integrated over 50 years calculated in accordance with IJC methodology) greater than 1 millirem to the whole body from a daily ingestion of 2.2 litres of lake water per day for one year.

E.5 HAZARDOUS POLLUTANTS

Annex 10, G.L.W.Q.A. contains two lists of compounds. One list is titled Hazardous Polluting Substances; the other, Potential Hazardous Polluting Substances. Ten inorganic chlorides are classified as hazardous and three as potentially hazardous. Cobalt is extremely toxic to fish. Three cobalt compounds are classified as hazardous.

Magnesium, an essential element for plant and animal life, can cause a cathartic action on the gastro-intestinal tract when present in drinking water in concentrations over 125 milligrams per litre. Water containing this concentration may also have a disagreeable taste.

At concentrations above 250 milligrams per litre, sulphates in raw drinking water may cause a similar effect to excessive magnesium. Ten sulphate compounds are classified Hazardous and three, Potentially Hazardous.

APPENDIX F

FEDERAL AND PROVINCIAL GUIDELINES AND REGULATIONS

This appendix is a list of Federal and provincial guidelines and regulations used to set effluent requirements. Where the limit in the guideline or regulation is a concentration number, i.e. milligrams per litre, this limit has been converted into a loading limit (as used in Appendix A where flows are available). Multiplying the concentration limit by the flow rate times a conversion factor results in a loading requirement or guideline number. The lists shown below are extracts from the respective document identified. For a more detailed description of the guidelines and regulations refer to the particular document listed.

F.1. Control Order or Requirement and Direction

- (discharge limits may be specified as requirements)

F.2 Certificate of Approval

- (discharge limits may be specified as requirements)

F.3 Objectives for the Control of Industrial Waste Discharges in Ontario (Provincial)

Biochemical Oxygen Demand	15.0 mg/L maximum
Suspended Solids	15.0 mg/L maximum
(Residue Particulate)	
Metals	
- cadmium	0.001 mg/L maximum
- chromium	1.0 mg/L maximum
- copper	1.0 mg/L maximum
- lead	1.0 mg/L maximum
- mercury	0.001 mg/L maximum
- nickel	1.0 mg/L maximum
- phosphorus	1.0 mg/L max., or < 4.54 kg/day
- tin	1.0 mg/L maximum
- zinc	1.0 mg/L maximum

NOTE - Total quantity of metals discharged will also be considered and dilution with clean water streams to achieve the above concentrations is not acceptable.

Phenols	0.02 mg/L maximum
Ammonia (NH_3 as N)	10.0 mg/L maximum
pH	range of 5.5 to 9.5
Sulphates, Chlorides, Dissolved solids	Keep as low as possible, through best available, practicable technology.
Temperature	11 degrees Celsius maximum - above receiving water temperature.

F.4 Provincial Liquid Effluent Guidelines for the Petroleum Refining Industry (Provincial)

Oil and Grease (Solvent Extractables)	15.0 mg/L maximum
Phenols	0.02 mg/L maximum
Suspended Solids (Residue Particulate)	15.0 mg/L maximum
Ammonia (NH_3 as N)	10.0 mg/L maximum
Chemical Oxygen Demand (COD)	200 mg/L maximum *
pH	range of 5.5 to 9.5
Metals - chromium	1.0 mg/L maximum
- copper	1.0 mg/L maximum
- lead	1.0 mg/L maximum
- zinc	1.0 mg/L maximum
- nickel	1.0 mg/L maximum

* Interim objective based on capability of current best practicable technology; may be revised as alternative technology becomes available and where indicated by demonstrated adverse effects on receiving water quality.

F.5 Guidelines for Environmental Control in the Ontario Mineral Industry (Provincial) - 1981

Biochemical Oxygen Demand	15.0 mg/L maximum
Oil and Grease (Solvent Extractables)	15.0 mg/L maximum
Metals (excluding calcium, magnesium, potassium and sodium)	1.0 mg/L maximum
Cumulative concentration of copper, lead, zinc and nickel	1.0 mg/L maximum
Cadmium, mercury	Background concentration or less
pH	range of 5.5 to 10.6
Ammonia (NH_3 as N)	10.0 mg/L maximum
Phosphorus	1.0 mg/L max., or < 4.54 kg/day
Arsenic	0.5 mg/L maximum
Cyanide	2.0 mg/L maximum
Phenols	0.02 mg/L maximum
Sulphates, dissolved solids -	Keep as low as possible using best practicable technology

F.6 Pulp and Paper Effluent Regulations, Ottawa 1972 (Federal)

Limits shown on the Wastewater Discharge Summary sheets and accompanying tables are from Control Orders and may be based on Federal Regulations. The limits are generally set on a site-specific basis. See Table 6 of this report. The table shows Biochemical Oxygen Demand and Total Suspended Solids limits for each mill in the report.

F.7 The Chlor-Alkali Mercury Liquid Effluent Regulations, Ottawa 1977 (Federal)

2.50 grams of mercury per tonne of a plant's reference production rate (normally the arithmetic mean of actual daily production of chlorine during the previous month, excluding days when there was no production).

F.8 Atomic Energy Canada Limited licence limits. (Federal)

AECL limits are set on a site-specific basis for specific parameters.

F.9 Metal Mining Liquid Effluent Regulations and Guidelines, Ottawa 1977 (Federal)

Authorized Levels of Substances

Item	Substance	Column I Maximum Authorized Monthly Arithmetic Mean Concentration	Column II Maximum Authorized Concentration in a Composite Sample	Column III Maximum Authorized Concentration in a Grab Sample
1	Arsenic	0.5 mg/L	0.75 mg/L	1.0 mg/L
2	Copper	0.3 mg/L	0.45 mg/L	0.6 mg/L
3	Lead	0.2 mg/L	0.3 mg/L	0.4 mg/L
4	Nickel	0.5 mg/L	0.75 mg/L	1.0 mg/L
5	Zinc	0.5 mg/L	0.75 mg/L	1.0 mg/L
6	Total Suspended Matter	0.5 mg/L 25.0 mg/L	0.75 mg/L 37.5 mg/L	1.0 mg/L 50.0 mg/L
7	Radium-226	0.5 pCi/L	20.0 pCi/L	30.0 pCi/L
8	pH	6.0 minimum	5.5 minimum	5.0 minimum

Note: The concentrations are given as total values with the exception of radium-226 which is a dissolved value after filtration of the sample through a 3 micron filter.

The acceptable levels of substances in the Metal Mining Liquid Effluent Guidelines have the same numercial values as the authorized levels of deleterious substances prescribed in the Metal Mining Liquid Effluent Regulations.

F.10 Interim Pulp and Paper Effluent Guidelines, Ontario 1970

Concentration limits:

50 milligrams per litre for Total Suspended Solids
50 milligrams per litre for Biochemical Oxygen Demand

are acceptable on an interim basis for effluents from pulp and paper mills. Where a mill reduces the effluent volume by water conservation and by recycling, these concentrations may be expected.

APPENDIX G

ANALYSIS OF TRACE CONTAMINANTS

Great advances have been made in the field of contaminant analysis. In the 1950's, prevailing methods could measure effluent pollutants in the parts per thousand (or .01%) range. Methods have improved now so that some organic and most inorganic pollutants can be accurately identified and quantified in the parts per trillion range.

In the 1950's, an advance was made in organic chemical analysis with the commercial development of gas chromatographs (GC). The functions of a GC are as follows.

(a) Separation of a mixture of compounds into individual components (usually relies on the compound's physical and chemical nature, volatility, polarity, molecule size, etc.).
(b) Detection and quantification of each individual compound as it is eluted (the detector response is proportional to the concentration). However, the resolution for complex mixtures was limited and other confirmatory techniques like infrared analysis were needed.

In the mid 1960's, scientists developed ways of interfacing a mass spectrometer (MS) to a gas chromatograph. Thus, the MS became, in essence, a very specialized and highly sophisticated detector for the GC. With these two instruments coupled together, the individual compound separated by the GC enters theMS and a "finger-print" known as a mass spectrum is produced. This mass spectrum is compared with all those stored in a computer library associated with the instrument and if a match is found the compound is identified.

In the period between 1975 and 1980, GC/MS instrumentation advanced significantly, especially with regard to the computer search capabilities and libraries. The new instruments were programmed to allow rapid identification of an unknown compound by comparing its mass spectrum with over 30,000 organic compounds in a reference library.

GC/MS has been the major instrument used in various trace contaminant studies made by Ministry of Environment (MOE),Environment Canada (E.C.), U.S. Environmental Protection Agency (EPA), Petroleum Association for the Conservation of the Canadian Environment (PACE), American Petroleum Institute (API), National Council for Air and Stream Improvement of Pulp and Paper Industry of the USA (NCASI), Chemical Manufacturers Association (CMA) and others.

At the same time, methods such as atomic emission and atomic absorption spectrophotometry have been developed to permit rapid, sensitive, multi-element metal analysis.

For specific treated industrial effluents like those from Ontario's petroleum refineries, organic chemicals and the iron and steel industry, these advances in analytical methods have resulted in the identification and quantification of some organic compounds in the parts per trillion range.

Trace contaminant data on effluents from the pulp and paper industry were published in the MOE report Inventory of Pulp and Paper Mill Effluent Constituents - Lake Superior by C. Cherwinsky and D. Murray (April 1986).

Trace contaminant information from joint surveys (MOE and E.C.) on the Niagara River is found in:

NRTC Appendix Report: Canadian Point Sources
To The Niagara River Final Report on MOE and
EPS 1981/82 Surveys (1985) (Published)

Additional trace contaminant data, included in MISA Pilot site investigations and the Upper Great Lakes Connecting Channels Studies , are as follows:

Source	Samples Taken		Data Report Release	Conventionals	Metals	Volatiles	Extraxtables	Pesticides	PCBS
	Year	#							
St. Mary's Paper	1986	29	1988	x	x	x	x	-	x
	87-88	160	1988	x	x	x	x	x	x
Algoma Steel	1985	58	1986	x	x	x	x	-	x
	1986	185	1987	x	x	x	x	-	x
	87-88	664	1988	x	x	x	x	x	x
CIL (Courtright)	1986	1	1988	x	x	x	x	-	x
Chinook Chemicals	1986	1	1988	x	x	x	x	-	x
Dow Chemicals	1985	12	Jan 1986	-	-	x	x	x	x
	1986	515	1987	x	x	x	x	-	x
ESSO Petroleum	1985	1	Jan 1986	-	-	x	x	x	x
	1986	5	1988	x	x	x	x	-	x
ESSO Chemicals	1985	1	1988	-	-	x	x	x	x
	1986	1	1988	x	x	x	x	-	x
Ethyl Corp.	1986	5	1988	x	x	x	x	-	x
Dupont (Corunna)	1986	1	1988	x	x	x	x	-	x
Polysar (Sarnia)	1985	2	Jan 1986	-	-	x	x	x	x
	1986	231	1987	x	x	x	x	-	x
Petrosar (Polysar)	1986	5	1988	x	x	x	x	-	x
Shell Oil	1986	5	1988	x	x	x	x	-	x
Suncor	1985	1	1988	-	-	x	x	x	x
	1986	5	1988	x	x	x	x	-	x
Union Carbide (Corunna)	1986	3	1988	x	x	x	x	-	x
Lambton Generating	1986	1	1988	x	x	x	x	-	x
Ford (Windsor)	1985	5	1988	x	x	x	x	-	x
Wickes (Windsor)	1985	3	1988	x	x	x	x	-	x
General Chemical (Amherstberg)	1985	5	1988	x	x	x	x	-	x

Note: X means analysis was or will be done

Trace contaminant data are also found in the following Ministry of the Environment/Environment Canada reports (publication date) which summarize joint surveys carried out by both federal and provincial officials:

1984 Survey of Northern Wood Preservers Inc.,
Thunder Bay, Ontario, October (1986)

1984 Tetra-Ethyl Lead Plant Survey,
Ethyl Corporation of Canada Ltd.
Corunna, Ontario (1986)

Industrial Effluent Survey, Domtar Inc.
Domtar Packaging Group, Trenton, Ontario
November 16-19, 1981 (1985)

Industrial Effluent Survey, Domtar Chemicals
Group - Wood Preserving Division
Trenton, Ontario, Nov. 16-19, 1981 (1985)

Industrial Effluent Survey, Bakelite
Thermosets Ltd., Belleville, Ontario
November 2-5, 1981 (1984)

Industrial Effluent Survey,
Dupont Canada Inc., Maitland, Ontario
June 21-25 (1984)

Industrial Effluent Survey, Celanese
Canada Inc., Maitland, Ontario
January 21-25, 1982 (1984)

1980-81 Cornwall Point Source Survey (1986)

St. Clair River Pollution Investigation
MOE - EC Report Jun 1986

Preliminary Report - St. Clair River MISA
Pilot Site Investigation - Vol 1 (under press) 1987
G. Johnson (editor)

G.1.1 DIOXIN TEST RESULTS FROM ONTARIO PULP AND PAPER MILLS

In March of 1986 the Ontario Ministry of the Environment took sludge samples from eight Ontario pulp and paper mills for dioxin and furan testing. The results were made available July, 1987. The mills tested were Great Lakes Forest Products in Dryden, the Abitibi-Price Thunder Bay mill, Domtar in Red Rock, Kimberly-Clark in Terrace Bay, James River Marathon in Marathon, E.B. Eddy in Espanola, Ontario Paper in Thorold and Domtar in Cornwall.

The sampling was undertaken following detection of 2,3,7,8-TCDD, a dioxin, in sludge from Boise Cascade's secondary treatment system in Fort Frances and other mills in Maine, Wisconsin and Minnesota. No detectable concentrations of 2,3,7,8-TCDD were found. The detection limits for the dioxin at the eight mills varied from 20 to 100 parts per trillion (ppt), depending on the level of chemical interference encountered in the samples.

Analyses for other forms of dioxins and related furans revealed less toxic tetra, hepta and octa dioxins and tetra and octa furans in some samples. Octa dioxin was discovered at a level of 1,800 parts per trillion in settling sludge at the E. B. Eddy mill in Espanola, at 120 and 140 ppt in sludge at the Abitibi-Price mill in Thunder Bay and at 130 ppt at the Domtar mill in Cornwall. Hepta dioxin was discovered at a level of 360 ppt in settling basin sludge at the E. B. Eddy mill in Espanola. Tetra dioxin was found at a level of 180 ppt at the Kimberly-Clark mill in Terrace Bay. Tetra furan was revealed at a level of 1,100 ppt at the E. B. Eddy mill in Espanola, 260 ppt at the Great Lakes mill in Dryden, 280 ppt at the Domtar mill in Cornwall and 37 ppt at the James River Marathon mill in Marathon. Octa furan was found at a level of 350 ppt at E. B. Eddy in Espanola.

The sludge is disposed of at approved landfill sites. All values are below current U.S. Environmental Protection Agency cleanup criteria of one part per billion (1000 ppt) 2,3,7,8-TCDD for residential soils.

The Environment Ministry also tested leachate from a closed Boise Cascade sludge disposal site located in Miscampbell Township just outside Fort Frances. No 2,3,7,8-TCDD was found at a detection level of 20 parts per quadrillion (.02 ppt). No other dioxins or furans were detected.

Sampling of 50 fish in the Rainy River system below the Boise Cascade mill in Fort Frances revealed 2,3,7,8-TCDD in 16 of 42 fish at levels of 1 to 9 parts per trillion. These levels are below Health and Welfare Canada's guideline of 20 parts per trillion for the consumption of sport fish. Twenty fish from Thunder Bay inner harbour and the mouth of the Mission River have also been analyzed by the environment ministry for 2,3,7,8-TCDD. None was detected.

A 24-hour composite total mill effluent sample from Boise Cascade's Fort Frances mill revealed no 2,3,7,8-TCDD at a detection level of 70 parts per quadrillion (.07 ppt). However, tetra furan was found at levels of 210 ppq (.21 ppt) and 230 ppq (.23 ppt). The Ministry of the Environment sampling of drinking water supplies downstream from Fort Frances has not revealed any dioxins or furans.

APPENDIX H

Ontario Ministry of the Environment

Regional Offices

The Director
Southwest Region
985 Adelaide Street South
London, Ontario

The Director
West Central Region
119 King Street West
12th Floor
Hamilton, Ontario

The Director
Central Region
7 Overlea Blvd.
4th Floor
Toronto, Ontario
M4H 1A8

The Director
Southeastern Region
133 Dalton Street
P.O. Box 820
Kingston, Ontario

The Director
Northeastern Region
199 Larch Street
Sudbury, Ontario
P5E 5P9

The Director
Northwestern Region
435 James Street South
P.O. Box 5000
Thunder Bay, Ontario
P7C 5G6

APPENDIX H ...continued

Ontario Ministry of the Environment

District Offices

Central Region

Halton-Peel District Office
1226 White Oaks Blvd.
Oakville, Ontario
L6H 2B9

Barrie District Office
12 Fairview Road
Barrie, Ontario
L4N 4P3

Peterborough District Office
139 George Street North
Peterborough, Ontario
K9J 3G6

Muskoka Haliburton District Office
Gravenhurst Plaza General Delivery
Gravenhurst, Ontario
P0C 1G0

Northeast Region

North Bay District Office
Northgate Plaza Suite 109,
1500 Fisher Street
North Bay, Ontario
PIB 2H3

Sudbury District Office
199 Larch Street, 11th floor
Sudbury, Ontario
P5E 5P9

Sault Ste. Marie District Office
445 Albert Street East
Sault Ste. Marie
P6A 2J9

Timmins District Office
83 Algonquin Blvd. W.
Timmins, Ontario
P4n 2R4

Northwest Region

Thunder Bay District Office
435 James Street South, 3rd floor
P.O. Box 5000
Thunder Bay, Ontario
P7C 5G6

Kenora District Office
808 Roberston Street
Kenora, Ontario
P9N 1X9

Southeast Region

Cornwall District Office
2nd floor, 4 Montreal Road
Cornwall, Ontario
K6H 1B1
K7L 4X6

Kingston District Office
P.O. Box 820
133 Dalton Avenue
Kingston, Ontario

Ottawa District Office
2378 Holly Lane 2nd floor
Ottawa, Ontario
K1V 7P1

Southwest Region

Sarnia District Office
265 Front Street
Sarnia, Ontario
N7T 7X1

Owen Sound District Office
1180 - 20th Street
Owen Sound, Ontario
N4K 6H6

Windsor District Office
6th floor - 250 Windsor Avenue
Windsor, Ontario
N9A 6V9

West Central Region

Haldimand/Norfolk Brant
Box 2112
119 King Street West, 9th floor
Hamilton, Ontario
L8N 3Z9

Cambridge District Office
P.O. Box 219, 400 Clyde Road
Cambridge, Ontario
N1R 5T8

Hamilton District Office
Box 2112
119 King Street West, 9th floor
Hamilton, Ontario
L8N 3Z9

Welland District Office
637 - 641 Niagara North
Welland, Ontario
L3C 1L9